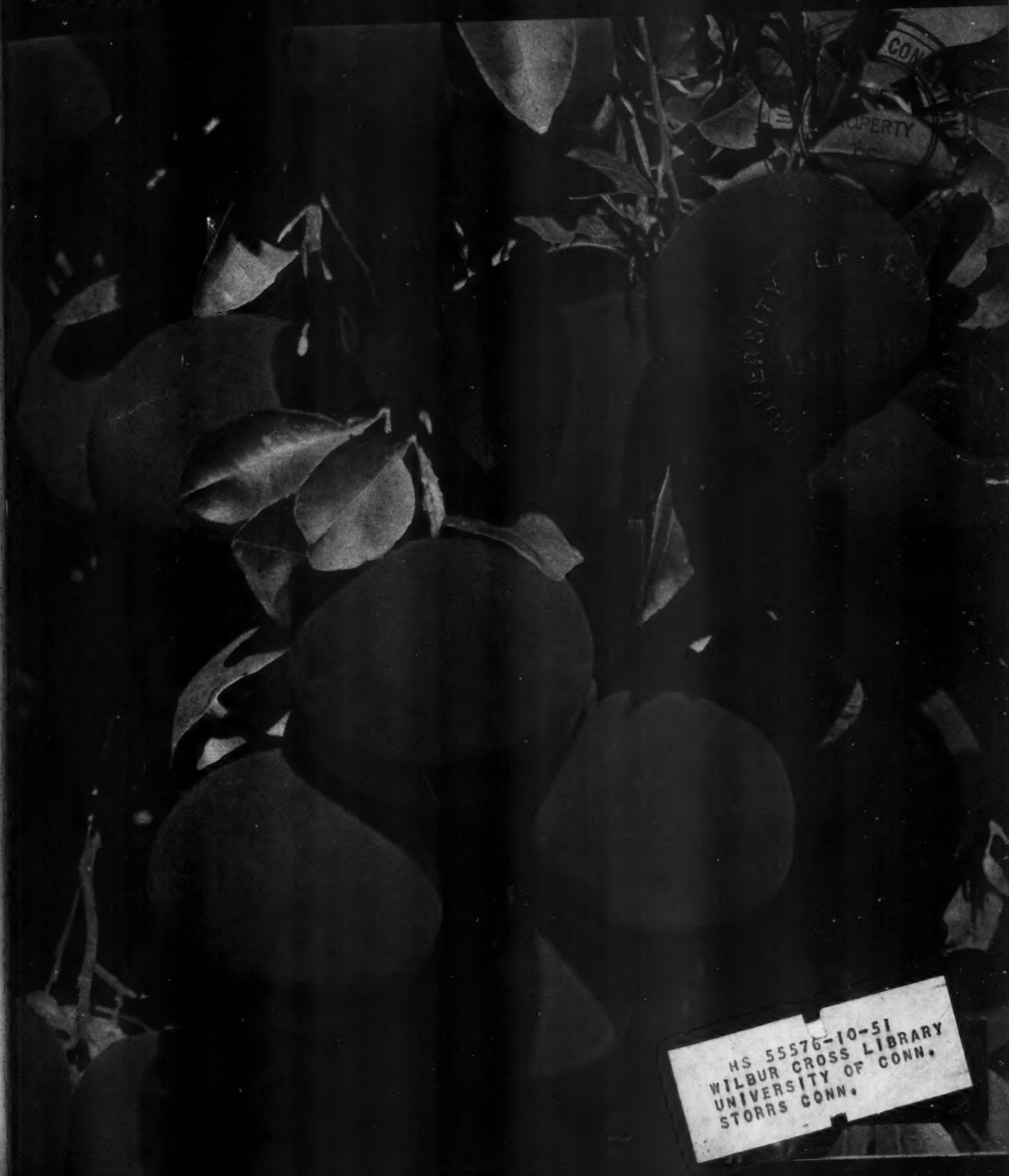


American

FRUIT GROWER

JANUARY

1947



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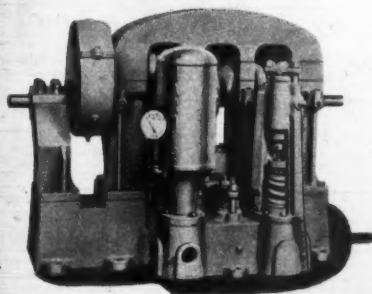
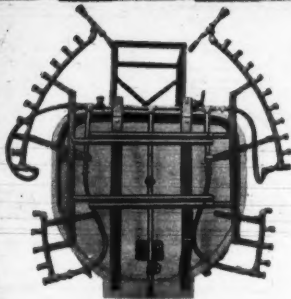


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Hardie pumps have the stamina for boom spraying and heavy duty jobs.

● Various new-style sprayers, still more or less in the experimental stage are saving time and labor in spray application. Hardie has endorsed only innovations of proved dependability. "Boom" spraying with Hardie Sprayers is now being successfully carried on in many large scale operations. Any heavy duty Hardie can be easily converted to a Boom sprayer by use of a multiple nozzle boom, controlled by driver of tractor or sprayer. This one-man Hardie covers large areas in a day's work and puts on the spray with the pressure and capacity necessary to make it effective. Look to Hardie as always for new things you can depend on, and the familiar Hardie Sprayers in all sizes and models.

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Write for new 1947 Hardie Catalog.



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Dependable Sprayers

PERFECT AGITATION • COMPLETE LUBRICATION

JANUARY, 1947



PRUNING TIME IS PLANNING TIME, especially this year when there may be short supplies of some spray chemicals. Growers are advised to order soon and take early delivery of bulky materials

such as Dormant Oils, Flotation Sulfur Paste and Lime Sulfur. Planning done now can make a major difference in the effectiveness of programs as they are carried out later.

New Spray Chemicals Create New Opportunities in Planning 1947 Programs

IT's no accident that 1946 was a banner year for many growers. From many sections of the country, growers report more effective disease and insect control with less expense and less labor than ever before. Added to that, many a grower found himself "back in the fruit business" after disastrous years of heavy insect infestation.

New and better chemicals, for the most part, helped achieve these results.

Growers who used these new products last year cut expenses for materials and labor. At

the same time, they got better control of insects and disease. Many others plan to include these improved materials in 1947 schedules to keep quality up to high standards.

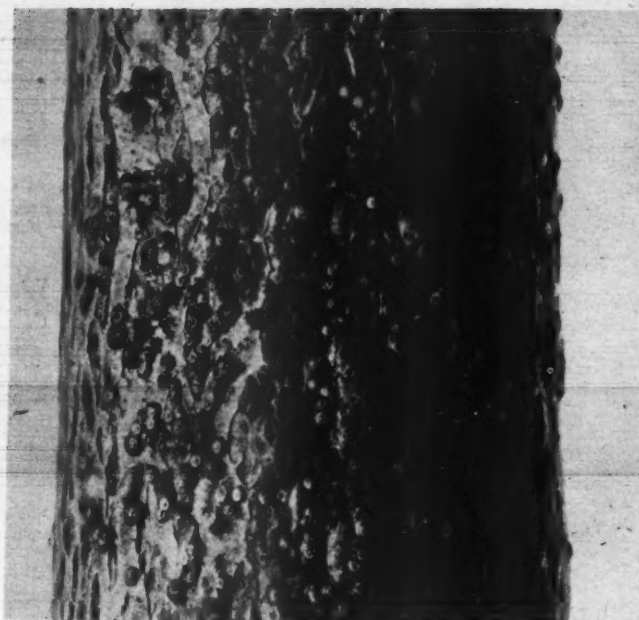
Now is the time to study the reports of your Experiment Station and consult with the Du Pont Technical Representative in your locality to get the most out of your program during the coming season.

* * *

The following Du Pont chemicals warrant serious consideration of growers for 1947:



EARLY CONTROL OF SCAB AND SCALE makes it easier to keep fruit and trees clean through the season. Ground spraying of dead leaves with KRENITE Du Pont Dinitro Spray kills over-wintering scab. KRENITE can also be used as a dormant tree spray to fight



scale (at right), and over-wintering forms of rosy, apple and green aphids. Du Pont Dormant Spray Oils also give effective control of many scale insects as well as European red mite, pear psylla, and apple red bug.

KRENITE* Dinitro Spray. Especially effective dormant spray for the control of aphids, bud moth, oyster shell scale, peach leaf curl, pear psylla, sooty blotch on pears, over-wintering scab (ground spray).

Dormant Oils (Paraffinic types). Formulated as 99% emulsifiable oil and 83% oil emulsion used in control of scale insects (San Jose, terrapin, scurfy, and lecanium), European red mite, apple red bug, buffalo tree hopper, case bearer, leaf roller, and pear psylla.

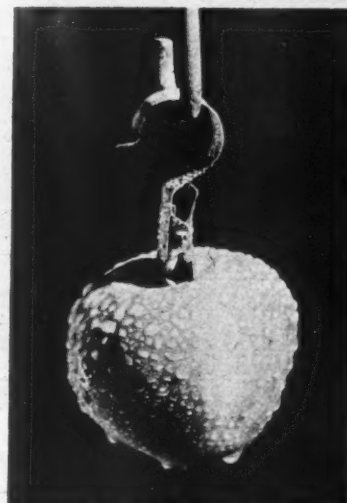
FERMATE* Fungicide. A new organic product which reduces or avoids the russetting caused by certain other fungicides and gives effective control of scab, cedar apple rust, quince rust, apple blotch, black rot, Brooks fruit spot, and bitter rot on

apples as well as brown rot and leaf spot on cherries.

ZERLATE* Fungicide. Another new organic fungicide which gives exceptional results as a control for brown rot and Japanese beetles on peaches. Like FERMATE, it has natural adhesive and wetting qualities; sticks well to foliage and fruit.

DEENATE* DDT. One factor in the success of DDT as a control of insects on growing crops is the particle size of the DDT used in the formulation. All DEENATE is formulated to the specific particle size that Du Pont research shows to be best.

SULFORON* (wetttable sulfur) and SULFORON-X* (a micro-fine wetttable sulfur) are also formulated to the particular particle size which gives best results.



UNIFORM SPRAY COVERAGE on this apple is the result of carefully formulated Du Pont products. Note how the globules are distributed evenly without running together or running off. When dry, this fruit will be protected by a fine residue.

For further information about these and other Du Pont pest control products, write the Du Pont Company, Grasselli Chemicals Dept., at any of the following addresses: Wilmington, Del.; El Monte, Calif.; Taylor Way and Lincoln Ave., Tacoma, Wash.



DU PONT PEST CONTROL PRODUCTS

INSECTICIDES . . . DEENATE* DDT, GRASSELLI* Lead Arsenate, NUREXFORM* Lead Arsenate, Calcium Arsenate, Paris Green, Oil Sprays, ALCOA** Cryolite, "Black Leaf 40",† "Black Leaf 155".†

FUNGICIDES . . . COPPER-A Compound, ZERLATE*, FERMATE*, SULFORON* and SULFORON-X*, Bordeaux Mixture, Lime Sulfur, Flotation Sulfur Paste.

OTHER MATERIALS . . . 2,4-D WEED KILLER, AMMATE* Weed Killer, Du Pont Spreader-Sticker, Special Dust Mixtures, KRENITE*, PARMONE* Fruit Drop Inhibitor.

*Trade Mark of E. I. du Pont de Nemours & Co. (Inc.)

**Trade Mark of Aluminum Company of America

†Trade Mark of Tobacco By-Products Company



BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

"Lots of Hills and Mud-Puddles"

... but our outfits go anywhere"



Frank Penstone & Sons, Pittsfield, Illinois

Carl Penstone on the deep-cushioned seat of their "Caterpillar" Diesel D4 Tractor. Standing is his father, Frank Penstone, Pittsfield, Illinois.

Located on bluffs close to the Illinois and Mississippi Rivers, the 250-acre orchards of Frank Penstone & Sons have soil, climate and topography in their favor — to make their Willow Twig, Red Delicious, Winesap, Golden Delicious, Grimes Golden and Jonathan apples thrive.

But their steep land, which drains air well, and gets ample rainfall, could often complicate their problems of producing clean fruit — and getting it harvested on time. "Could" — except for the Penstones' quartet of "Caterpillar" track-type Tractors.

"They never have quit on us or failed us", states Frank Penstone. "Lots of times we go

through water a-foot deep. We have lots of hills and mud-puddles. The D2, for example, will pull our 500-gallon Speed Sprayer anywhere. We spray at fourth speed with this rig. Several times, their traction has saved the quality of our apple crops.

"We built our ponds to supply overhead storage tanks with 'Caterpillar' equipment. These tractors often haul our crop out when it's too muddy for trucks — just as they pull our 'invasion barge' type of brush burner over soft going. Only track-type tractor power can do our work on time."

And only "Caterpillar" builds with 40 years of track-type tractor experience!

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DIESEL



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ENGINES

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"Spectacular Performance"

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**GESAROL
AK 50**



DDT Scores Again

"Codling moths, long time enemy of apple orchards over every major fruit section of the United States, are taking their worst beating in the industry's history. Many orchardists... state that DDT is giving them almost perfect control this year."

BETTER FARMING METHODS (NOV. '46)



No longer is it a question of "Can you afford to use DDT?" but rather "Can you afford NOT to?"

For here is the most powerful weapon ever placed in the hands of fruit growers against a number of profit-robbing pests.

GESAROL* AK 50 is a tried-and-proven formulation developed by the Geigy Company—"Originators of DDT Insecticides"—and backed by 8 years of experience in DDT compounding and application. It is a finely-ground wettable powder containing 50% Geigy DDT. This dependable DDT composition is giving amazing results in control of Codling Moth on apples

and pears. GESAROL AK 50 is also proving highly efficient in the control of Oriental Fruit Moth on peaches.

The Geigy Company offers Fruit Growers a special Folder giving carefully developed recommendations for the proper application of GESAROL AK 50 and other GESAROL DDT compositions on fruits, berries and nuts. This Folder is FREE on request. Supplementing this, it is also desirable to consult your county agent for local spray and dust schedules.

If you find GESAROL AK 50 is not available locally, simply send us the name and address of your dealer.

*Reg. U.S. Pat. Off.

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**ORIGINATORS OF
DDT
INSECTICIDES**

YOU'LL FIND SOIL SECURITY

AROUND THE CURVE

IN a large Maryland orchard one 80-acre block of trees is planted on the square. Another 80-acre block is planted on the contour. Both are the same age. According to the owners, the contour trees out-yield the square block two to one.

There is a cue here for increasing your income and extending the life of your orchard, even though it may be a small one. Cultivate cover crops *on the contour* as completely as possible. On any new acreage, by all means plant around the contour and investigate the advantages of terraces. You'll help save tons of topsoil and keep your trees well fed.

You can do all the necessary work with home-owned, family-farm equipment. The Allis-Chalmers Model B Tractor, illustrated, and a few of its companion implements, make a fully adequate outfit. This is the modern way to keep your overhead low, widen the profit margin in every bushel or box. Talk it over with your Allis-Chalmers dealer.



"YOU HAVE WHAT IT TAKES TO CONTOUR AND TERRACE"

— this free booklet tells a story every orchardist should know. Fully illustrated and diagrammed, it shows how to save precious soil with the tools found on practically every farm. Write for your copy today.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

JANUARY

VOL. 67

1947

No. 7

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AMERICAN FRUIT GROWER

LETTERS TO THE EDITOR

East vs. West

Gentlemen:

I made a statement to the effect that the Shenandoah-Cumberland Valley produced more apples than the Wenatchee-Yakima Valley of the Pacific Northwest. Is this correct?

Your reply to this question will be much appreciated.
Baltimore, Maryland C.D.N.

The 1934-42 average crops of Virginia, Maryland, West Virginia, Kentucky, and Tennessee combined (which includes the Shenandoah-Cumberland region) totaled 18,396,000 bushels, while the average crop during the same period in the state of Washington, alone (embracing the Wenatchee-Yakima area), totaled 27,939,000.—Ed.

"Lemon Pippin" Apple

Sir:

In the older orchards here, on southern Vancouver Island, there is a variety of apple (rather like a Winter Banana in appearance) known locally as a "Lemon Pippin."

Do you, or any of your readers, know its origin or what conditions it prefers?

I have not been able to get it from a nursery, and am hoping to graft it on a wild apple stock.

I have taken and appreciated your paper for the last 7 or 8 years, and would like to see it more widely circulated in this country.
R.R.1

Victoria, B. C. E. D. West

The Lemon Pippin may be one of the following varieties which are known as Yellow or Golden Pippin: Yellow Newtown (often called Yellow Newtown Pippin), the Newark Pippin, the Belmont, the Ortle, or the Golden Pippin known to some growers as the English Golden Pippin.

The word pippin signifies a seedling apple, and many varieties are called pippin. In itself, pippin does not indicate a specific variety.—Ed.

Pear-Shaped Apple

Dear Sir:

I read with interest your fruit journal every month and especially the "Letters to the Editor."

During my youth a neighbor had an apple tree with fruit shaped like a pear and—according to my memory—of a red color. The flavor, also according to my memory, was superior.

Do any of your readers know the present name of this apple? I have heard them called Pear apples. Also, I would like to learn the name of a nursery handling this type.

Cambridge, Ill. Gilbert Swanson

The term "Pearmain" is usually considered as meaning a pear shaped apple and, like pippin, refers to many different varieties.

The following may be referred to as pear apples: Winter Pearmain, Blue Pearmain, Cannon Pearmain, Hollow Crown Pearmain, Greyhouse, McAfee, Pryor, Hunt Russet, White Pearmain or Milam. Do these names suggest anything to our reader?—Ed.

A Noble Hobby

Dear Editor:

I certainly appreciate my AMERICAN FRUIT GROWER MAGAZINE. Many thanks for the "Letters to the Editor" page. I often get much fine information from those columns.

My hobby is selecting and grafting a collection of better fruit and nut trees, and to increase my collection, I would now like a few grafting scions of Broadview English walnut, Chinese persimmon, Lambert persimmon and Pineapple quince. If readers of AMERICAN FRUIT GROWER can furnish a foot or two grafting scions of above varieties, I would like to hear from them. Will pay cash.

Oxford, West Virginia Harvey Shepler

DDT and Bees

Dear Editor:

Now that you have had a year to evaluate the results of DDT, I'd like to know just what you have found out about DDT and bees. Does it kill them? When should DDT be applied, that is, is it safe to apply DDT during bloom, etc.

RFD 2

Willoughby, Ohio Grover Corsey

DDT is highly lethal to caged bees in laboratory tests. But if DDT is applied as commonly recommended and is not sprayed or dusted on open blossoms, it is not as harmful as arsenical sprays.

According to investigations by the USDA, the greatest loss of field bees occurs when they are hit directly by DDT. Bees apparently do not carry DDT back to the hive in pollen and it does not have the delayed killing action as is the case with arsenicals.—Ed.

Retarding Bloom

Dear Sir:

Our Burbank plums bloom very early and the weather is usually too cold for insects to be moving and giving good pollination.

Would it be any advantage to mulch the trees after the ground freezes to retard early blooming?

DePere, Wisc. Floyd Burchell

The early blossoming of Japanese plums is one of the objections to growing them in many parts of the United States.

Experiments have shown that mulching insulates the soil and causes mulched soils to be lower in temperature during the summer, and higher during the winter than tilled earth. However, soil temperature has little effect on time of bloom, and mulching frozen ground will not delay bloom. The controlling factor in delaying bloom is the air temperature, and this is most difficult to control.—Ed.

Suggestion on Deer Control

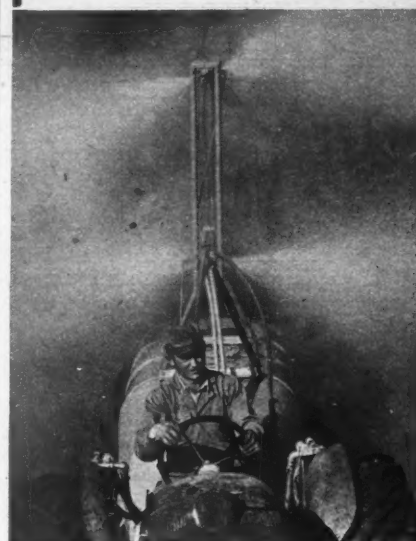
Gentlemen:

Regarding the question of Mrs. A. Calderom of San Francisco about what to do for deer eating the leaves off her fruit trees, I would like to say that the authorities here suggest a dog.

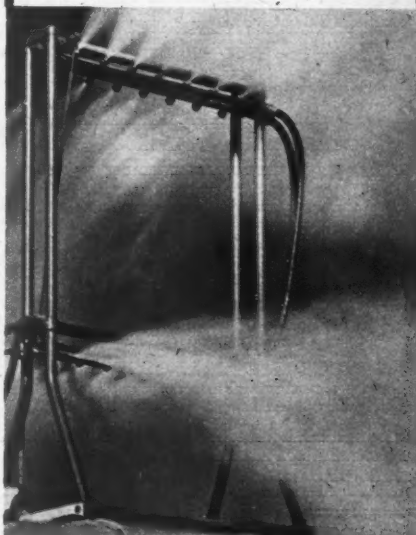
Anyone so bothered should get a dog, and they will find that deer will not go near any property where there is a dog present.

Whittier, Cal. Lauren Weaver

The Driver Does it Alone . .



All controls of the AUTOMATIC SPRAYING UNIT are within easy reach of the driver, enabling him to do a better, more even job of spraying than can be done with your best three man crew.



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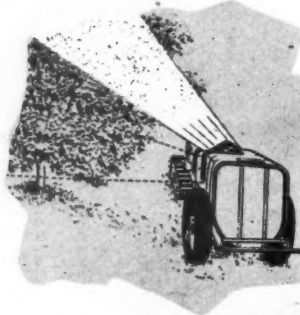
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ONE MAN and a SILVERAIRE

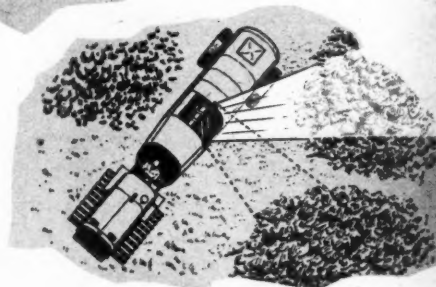
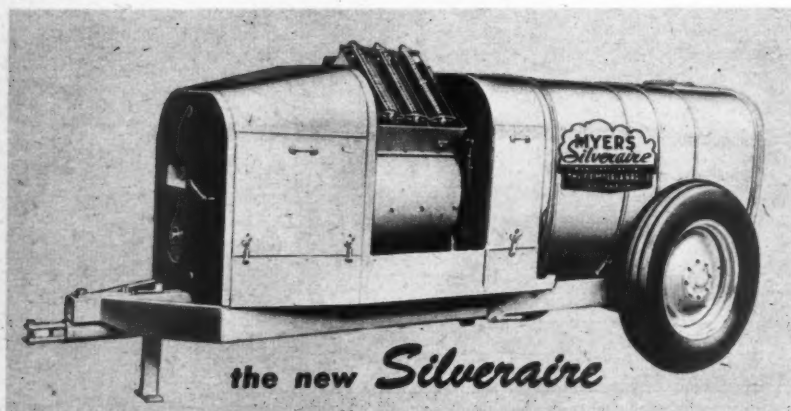
do it all — quickly, thoroughly, economically



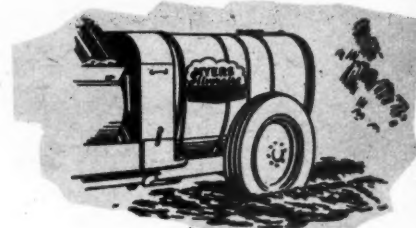
ONE MAN at the tractor wheel—none on the Silveraire. Saves two men's time.



AUTOMATIC up-and-down movement of nozzle heads assures penetration and complete, effective coverage.



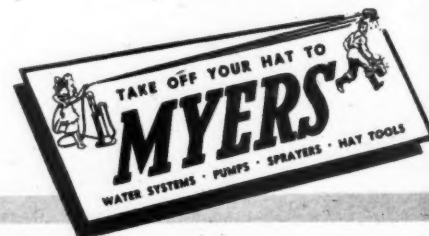
HANDY PUSH BUTTON directs spray automatically to trees when approaching and leaving them.



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These illustrations tell the story of a remarkable new combination of features offered in Myers Silveraire to speed and improve spraying on big acreage. Now it's a simple one-man job. Controls are within easy reach of the tractor operator. The Silveraire is practically automatic when easy adjustments have been made for type and size of trees.

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NAME _____
STREET _____ TOWN _____
STATE _____ COUNTY _____ R.F.D. _____

FRUIT BREEDING

Is a Gamble

Winning or losing depends on variety selection and skill of the plant breeder

By A. F. YEAGER, University of New Hampshire

TO a plant breeder, a fruit variety is not an indivisible unit but a collection of many characteristics which, put together, constitute a variety. A variety might be looked upon as resembling a hand in a card game. You, the grower, play your hand as best you may. Winning or losing depends on what is in your hand (the variety) and also how skillfully you play it (your cultural methods).

A plant breeder's operation, still using the card game analogy, consists of taking two hands held by two players around the table and putting them together (by the process of crossing). Then, since there is a limit to the number of cards one can hold, he discards half of them in the process of selection and if he knows the game and the requirements of a good hand, he should be able to choose a better hand (variety) than was available when he began his work. This is, of course, an oversimplification.

First, because an existing variety has many more characteristics than there are cards in a hand, and second, one cannot always see what the plants' characteristics really are. It is also true that many of our present asexually propagated varieties actually consist already of the two combined hands before separation. That is, they are hybrids of unknown parentage. Hence, seedlings from them may be far different than their parents. The result is, that crossing two sets of unknowns with each other gives largely unpredictable results. Nevertheless, the above is the basis of the process breeders ordinarily use.

If one wanted a longer keeping white-fleshed variety of apple which would be productive and of high quality, he might try to get it by crossing Ben Davis with McIntosh. This was actually done by the New York Agricultural Experiment Station at Geneva, and the end result was the Cortland variety, which is now rapidly making a place for itself in some sections of the country. Often crosses are made for the purpose of adding only one desirable factor possessed by an otherwise wholly undesirable variety, to another which possesses many other good traits. Thus, Dr. Saun-

ders, Canadian Horticulturist, during the last century crossed Siberian Crab

nately nearly inedible; scab resistance, prominently present in certain Russian varieties and in some introduced species; resistance to woolly aphids, fire blight, cedar rust, etc. Particular aromas, flavors, colors and shapes may also be favored. Bad habits such as biennial production, slowness to reach bearing age, too light or too heavy bearing, or a tendency to scald in storage or to be easily bruised may be targets for the plant breeder's labor.

The making of a variety is therefore not a haphazard business, but to be most successful requires a thorough knowledge of existing varieties and species, good judgment as to what



Cross-pollinating in peach breeding work. Photo from USDA.

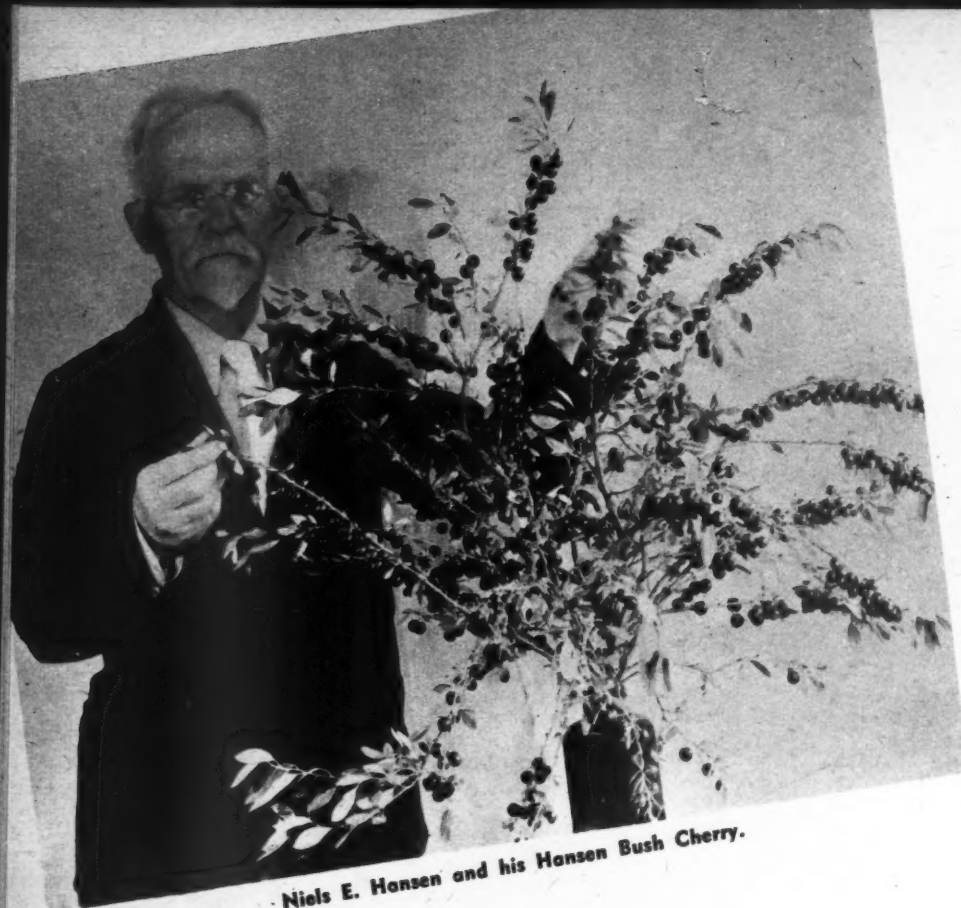
(*Malus Baccata*), which had only one good trait, extreme hardiness, with large high quality apples in an effort to add great hardiness to commercial varieties. The project was continued by his successor, the late Dr. Macoun, and more recently by M. B. Davis, the present Dominion Horticulturist, and others. Diligence, patience, and time have given the reward of high quality apples which can be grown hundreds of miles north of the former northern limits of apple production.

Other such characteristics which deservedly are being given attention are: late blooming to escape spring frost, best exemplified in our native American apples which are unfortu-

future requirements may be, and a tenacity of purpose on the part of the individual and the institution for whom he works that will carry through the years of crossing, selections, trials and re-trials that are needed before the result of his labors come to fruition.

The apple, for many reasons, is one of the most difficult and unpredictable fruits with which to do breeding work. Small fruits such as strawberries and raspberries reach bearing age from seedlings in a fraction of the time required for apples. Many more supposed-to-be-improved varieties have been introduced and have

(Continued on page 43)



Niels E. Hansen and his Hansen Bush Cherry.

BREEDING HARDY FRUITS FOR Northwest Prairie

By NIELS HANSEN, South Dakota State College

THE EDITOR ASKS for a 1000-word summary of my work the past 51 years beginning 1895 in breeding hardy fruits for the prairie Northwest. In the 1944 report of the Iowa State Horticultural Society, and later in the South Dakota State Horticultural Society appears my 22-page paper "50 Years Work as Agricultural Explorer and Plant Breeder."

New Types of Apples

I have originated many apples. At the north some Siberian crab is highly desirable in the pedigree. Dolgo is the most popular of my crabapples. It is of the *Pyrus baccata cerasifera* type. Success has been attained in importing McIntosh and Jonathan quality to Siberian crab; also in developing the native wild crab, *Pyrus ioensis*.

My best large yellow apples are Goldo and South Dakota Golden, both crosses of Duchess and Grimes Golden. The rich spicy sweetness of the Grimes is toned down by the juicy

acidity of Duchess.

My only dwarf apple so far is Anoka. It bears usually the year after planting. I have never recommended it for the commercial orchard, but there is a place for it as a dwarf early bearer in the home orchard. It is probably the earliest bearer in the world.

My new series of Redflesh apples will have wide popularity for home and commercial orchards. First came my Hopa crab with red flowers, fruit and flesh; a highly popular ornamental

for the lawn. The Redflesh crab with red flesh, very productive. And now Almata introduced in 1942. In 1944 this apple was 2 7/8 inches across. Further south no doubt it will be 3 inches. This changes the color-scheme of apple sauce and may change apple history.

About the Author

Since 1937 Dr. Hansen has been emeritus professor in charge of fruits and ornamentals at South Dakota State College. During this time, he made eight foreign tours, of which seven were to Russia. Before taking up the work of agricultural explorer, Dr. Hansen was for 42 years head of the Department of Horticulture at South Dakota State College.

In over 50 years of work, Dr. Hansen says he has never asked anyone what to do next. His advice to a young horticulturist is "Study the principles of science, then use the Pegasus wings of imagination—an eagle flies alone."

Pears

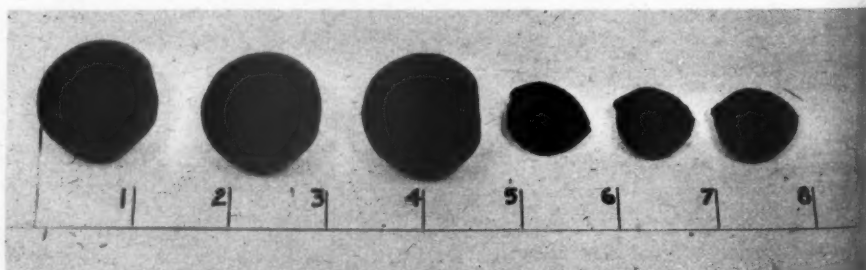
In my pear work the principle has been established that good fruit and immunity to fire-blight is obtained from crossing the pears of western Europe with the pears of North China, *Pyrus Ussuriensis* and *Pyrus Oboidea (Simonii)*. The scarcity of hardy pear stocks delays the extensive propagation of the twenty varieties named so far. My new pear, Hansen Seedless, is of excellent quality and is winter hardy. Proof against fire-blight at Brookings. As with other seedless fruits, an occasional seed is found. Perhaps care will be needed in selection of scions or bud-sticks.

Stock Orchards

I favor large state-owned orchards to raise stocks for budding and grafting apple, pear, plum, apricot, roses, etc. These stocks would be sold to nurserymen on a service basis. Nurserymen come and go and have no time to plant such essential stock orchards. But the state orchards would continue through the year.

Stone Fruits

Prairie plum culture was quickly changed when my hybrids appeared; (Continued on page 22)

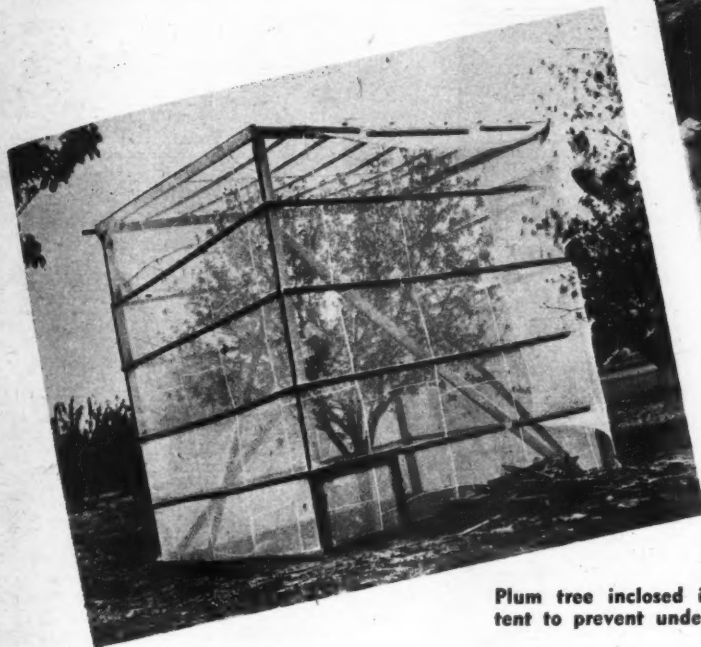


The Lalin apricot, one of 13 named varieties introduced by Dr. Hansen from Manchuria.

REPORT ON GENEVA

New York Experiment Station
Has Introduced 137 Varieties

By RICHARD WELLINGTON
New York State Experiment Station



Plum tree inclosed in a cheesecloth tent to prevent undesired pollination.

FRUIT BREEDING is one of the oldest projects at the New York State Agricultural Experiment Station. During the past 52 years, 137 fruits have been named and introduced for trial. At the present time there are many promising seedlings being evaluated and all those that are considered of value for one purpose or another will be turned over to the New York State Fruit Testing Association of Geneva for propagation and introduction.

The work of fruit breeding might be built around particular fruits or personnel involved. Again it can be considered from the standpoint of time. Prior to 1900 when the laws of segregation propounded by Gregor Mendel were discovered the breeder was concerned only with the first generation cross. Since this time the breeder has been more concerned with particular characters and how they are transmitted to the progeny.

The first Horticulturist of the Station, Emmett S. Goff (1882-1889) probably deserves credit for initiating the fruit breeding program, for in the winter of 1888-89 a number of strawberry crosses were made, resulting in 511 seedlings. He also must have

grown a few grape seedlings, for Spencer A. Beach (1891-1905), who succeeded him as Horticulturist, wrote a note in 1893 as follows, "Several grapes fruited this season are unknown, most of these are probably Station seedlings grown by Messrs. Goff and Beckwith." Seed from Goff seedling No. 19, probably exposed to open-cross-pollination was sown in 1892 and produced 4 seedlings. One of these seedlings No. 797 was named Goff in 1906 by Dr. U. P. Hedrick. Although Goff is good in quality it never became of commercial importance.

The breeding work really got underway when Beach "took over the reins" in 1891, for in 1892 crossing work was started in earnest with the strawberry, grape, gooseberry, currant, raspberry, pear, and apple. The first seedling was named in 1894. It was a strawberry originated by C. E. Hunn from a cross between Johnson Late and Sharpless. As Hunn had left the Station it was named in his honor.

In 1905, U. P. Hedrick became Horticulturist and he also gave his full support to the fruit breeding work. Beach had named none of his

seedlings but Hedrick during 1914 and 1915 named 18 of his apples after New York counties. Although several possessed desirable characters, Cortland, a cross between Ben Davis and McIntosh is the only one which has become of commercial importance.

Grapes originating during Beach's regime that were named are as follows:—

Ontario (Winchell x Diamond), Ripley (Winchell x Diamond), Brocton [Brighton x (Winchell x Diamond)], Dunkirk (Brighton x Jefferson), Hanover (Brighton x Niagara), Portland (Champion x Lutie), Sheridan (Herbert x Worden), and Urbana (Ross x Mills).

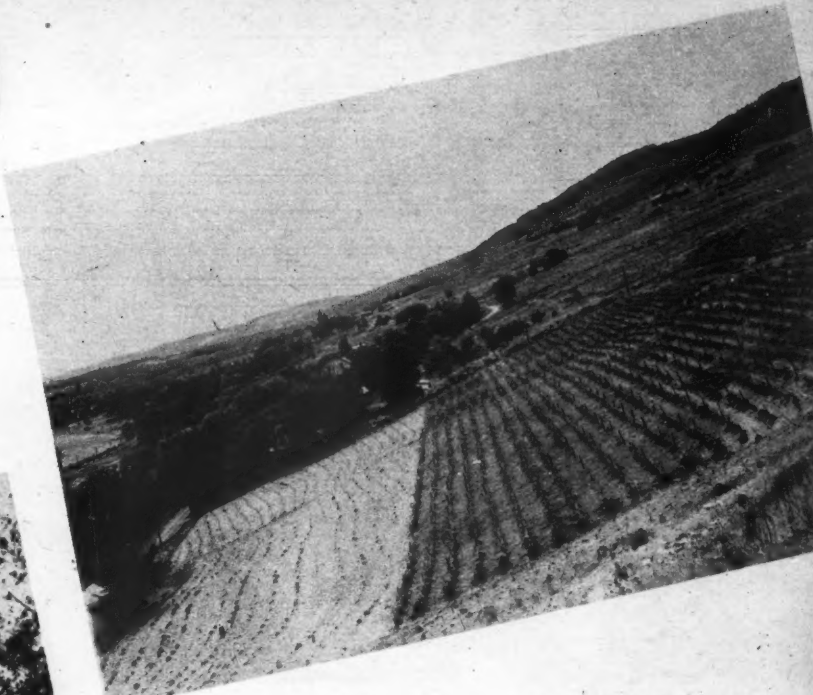
Apples

Between 1906 and 1913, many apple crosses were made and 3520 of the resulting seedlings were set out for fruiting. To date most of the desirable apples introduced by the Station originated during this period. In this list of introductions are included Carlton, Early McIntosh, Kendall, Lodi, Macoun, Medina, Milton, Newfane, Ogden, Orleans, Red Sauce, Sweet Delicious, Sweet McIntosh, and Webster.

From 1921 until the present time over 16,000 seedlings have been planted for fruiting but many of these are still too young for evaluation. In addition many more thousands were planted in the fall of 1946 and still more will be set in 1947. This increased number should improve the

(Continued on page 24)

The author wishes to state that the success of the breeding program at Geneva is due to the full-hearted cooperation of the administration, the fruit breeders of the Pomology Division and to the aid of the United States Department of Agriculture, the New York Botanical Garden, and numerous growers who are testing the seedlings under varied soil and climatic conditions.



Selected grape seedlings planted for trial in the Finger Lakes area.



Burbank at work in his garden in 1925.

LUTHER BURBANK

*The result of 10 years study
leads to a new understanding
of the famous plant breeder*

By W. L. HOWARD

I WELCOME the opportunity to tell the readers of the *AMERICAN FRUIT GROWER* about the ten-year study I made of Luther Burbank, 1932-1942. Two reports have been issued. The first was a University of California Agricultural Experiment Station Bulletin, No. 691, entitled *Luther Burbank's Plant Contributions*. This document contains a list of all the things Burbank originated from 1876 to 1926, or at least all that I could find. Dates of announcement are given, by whom disseminated, together with a brief account of the value of each item. The second report is my book, entitled, *Luther Burbank—A Victim of Hero Worship*.

The book consists of twenty-one chapters devoted to a discussion of the man: his childhood, education, how he came to embark upon a career of plant breeding, and all the vicissitudes of his life, including his two marriages, how he won his way to distinction, and finally, how he fell into the hands of exploiters and met with disaster. This is a human document that undertakes to answer the principal questions about the man and his activities.

It is this book that I have been

asked to talk about. It is not surprising that the public has been confused about Burbank because reports about him have been so diametrically different. During his lifetime he was pictured by his admirers as a superman and a benefactor of the human race, and by his detractors as a pseudo-scientist, who, by clever publicity, foisted a multitude of plants upon the public by fraudulently claiming that they were created by a process of breeding. Also, his severest critics would not admit that his productions possessed more than a mediocre value. Here are the facts.

When Burbank began his career of plant improvement, and for thirty years afterward, there was little exact information about the science of plant breeding. Botanists and horticulturists were aware that profound changes could be brought about by crossing species or varieties, but disappointment seemed to attend most of their efforts at improvement of fruits, in particular, by this means.

It is true that there had been a gradual improvement in annual things like grains, vegetables and flowers over the years, through crossing and

selection, but this plan did not seem to work very well with fruits. In fact results by state and government workers in this direction were practically nil. It is not surprising, therefore, that scientists were skeptical when Burbank began to announce and offer for sale many new varieties of bush and tree fruits which he said were the products of breeding.

"Who is this man Burbank, anyway?" it was asked. "Where did he receive his training, and what collegiate degrees does he hold?" When it was established that he had very little formal education, suspicion ripened into



Underneath the branches of this Cedar of Lebanon tree is Burbank's final resting place.

conviction that he must be a fraud. Some, before criticising, were fair enough to go to see Burbank. He readily showed what he had but when asked to see his detail records, he had little to show and admitted that he was not always certain of the parentage of many of his hybrids, especially where there had been multiple crosses. This was not only unorthodox, it was heresy—a deliberate violation of all the tenets of Science, and this view has been handed down in our Colleges and Universities to the present day.

Burbank's only defense was that he worked alone, had no time for keeping extensive records. What he wanted was results and there they were, and he may have hinted that institutional scientists, with all their facilities and records, could not match them. Men like Professor L. H. Bailey, President David Starr Jordan, Dr. Vernon J. Kellogg, and Professor Hugo de Vries, who were personally familiar

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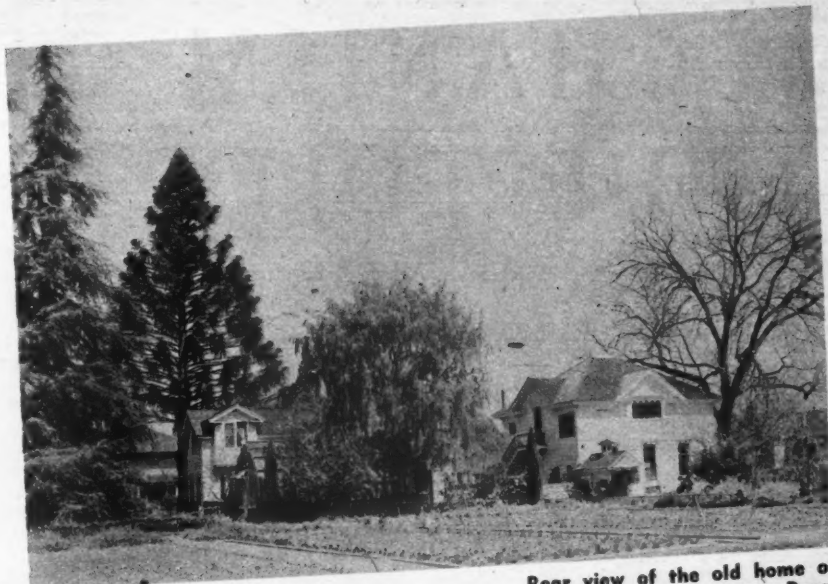
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with his methods, did indeed, express amazement at what they saw and heard from Burbank as to his procedure, but they accepted the facts of attainment and were not shocked at the roads he travelled in reaching his destinations, because he did always have a definite end in view in each breeding program.

Well, when institutional scientists learned that Burbank practiced comparatively little hand pollination, in the main depended upon insects as pollen carriers, trusted to his own powers of observation and knowledge of the types and varieties he had worked with to judge parentage in his hybrids, and kept only abbreviated records, they simply could not believe that it would be possible to obtain valid results by any such slipshod methods, and so refused to look upon him as a scientist, and no one but a scientist could be expected to breed anything of value.

On the other hand there were many who did believe in him, sang his praises, thought he was a wonder-worker; and this group far outnumbered the other. Unfortunately neither group had much factual evidence on which to base conclusions. The institutional critics rejected him chiefly because he did not conform to the standards by which they judged themselves and their colleagues; his methods were wrong, therefore his conclusions were not dependable. On top of this he carried on a nursery and seed business, sold everything he produced at high prices, and made what were, from their viewpoint, exaggerated and unreasonable claims for his products.

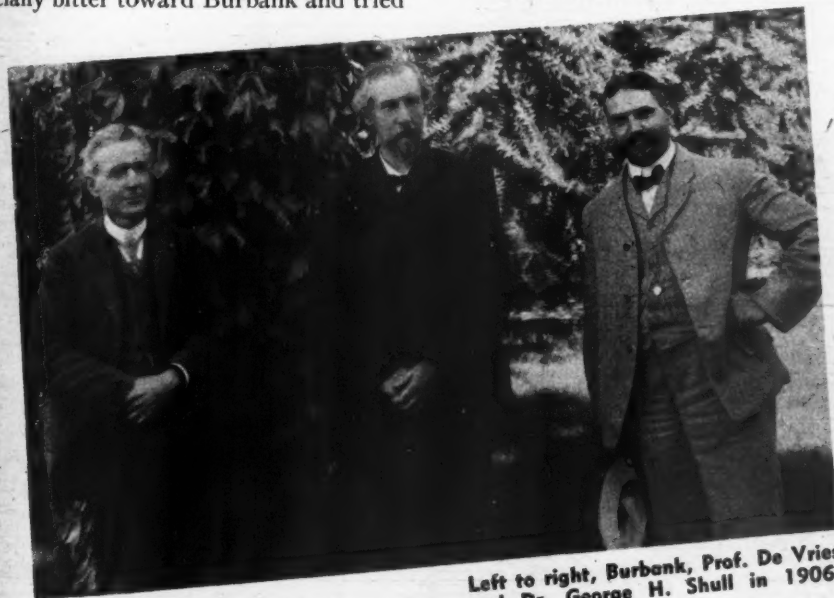
Nurserymen and seedsmen, his competitors, who did not handle his products, were as critical as the scientists but for different reasons. Florists, an aggressive group, were especially bitter toward Burbank and tried



Rear view of the old home of Luther Burbank in Santa Rosa.



A 60-year-old Royal hybrid walnut. This is believed to be one of the first five hybrids between the common black walnut of the Eastern states and the northern California black walnut. It has produced a ton of nuts in a single crop.



Left to right, Burbank, Prof. De Vries and Dr. George H. Shull in 1906.

to discredit him. This group took its cue from a man named O'Mara who visited Burbank's place and was turned away, as hundreds of others were, because Burbank did not have time to see him. Much ill will had been built up by disappointed visitors but O'Mara did something about it. He went home and wrote a highly sarcastic article for a florist's magazine, which was later re-printed in pamphlet form and widely circulated.

Burbank's fame with the masses was the result of an enormous amount of publicity he had received from magazines and newspapers, especially the Sunday editions. Beginning about 1909 several highly laudatory books and magazine articles appeared, each intended to cover Burbank's accomplishments. One book, by Harwood, became a sort of Bible and text-book for teachers of nature study and elementary science in thousands of schools throughout the United States but it disgusted scientific men. Many generations of our children have been taught that Burbank was one of our nation's heroes, along with Lincoln and Washington. No harm in this perhaps, had not too many of the teachers left the impression that Burbank was in league with the supernatural.

Burbank followed the practice of selling his new productions to dealers with full control, and they in turn, introduced them to the public often with exaggerated claims. This brought him into conflict with State and Federal officials who usually advise against spending much money for new and untried things. For example, a dealer once made excessive claims for the so-called Wonderberry. The *Rural New-Yorker* declared the plant was not only worthless but dangerous to eat because botanically related to
(Continued on page 34)

MECHANISM OF HEREDITY

By KARL SAX, Arnold Arboretum

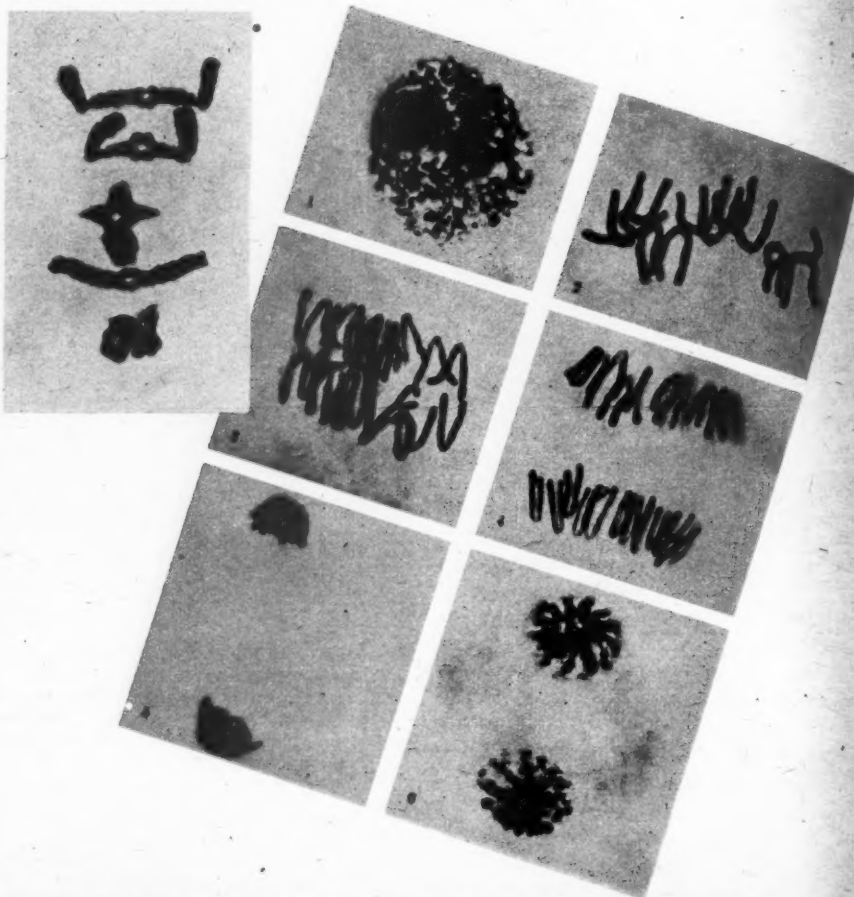
HOW did our horticultural fruit varieties originate and why do they differ so much in their breeding behavior? Cytological studies made during the past two decades have provided much information of value in answering these questions, and show how new horticultural varieties may be produced.

Cytology is the science of the cell—the unit of structure in both plants and animals. In the cells are the chromosomes, which carry the hereditary factors. The behavior of the chromosomes provide the mechanism of heredity. These chromosomes are small rod-shaped bodies only a few thousandths of an inch long. The cells of the developing plant all have the same chromosome number, and each species has a specific number of these chromosomes. For example, there are 17 pairs of these chromosomes in the apple, 7 pairs in the raspberry, and 24 pairs in the cultivated plum.

At the time of cell division these chromosomes split lengthwise, and each daughter cell receives one of these daughter chromosomes. The chromosomes pass through a series of changes in each cell cycle. These changes are shown in the photographs of cells of a conifer. During the "resting" stage the chromosomes are in loose coils. With the initiation of cell division they contract and later become oriented, so that when they divide the daughter chromosomes will go to opposite ends of the cells. They then pass into another "resting" stage before a new cycle is begun. Thus the chromosomes are perpetuated unchanged throughout the vegetative development of the plant.

There are two duplicate sets of chromosomes in the vegetative tissue. At the time of pollen and egg cell formation the similar chromosomes pair, and since each chromosome is in duplicate, they form half as many paired chromosomes as there were single chromosomes in the vegetative tissue. These paired chromosomes segregate at random and at the next division divide to produce the reproductive cells with the reduced or 1 N chromosome number. When the egg is fertilized the chromosome number is doubled. This random segregation, the reduc-

(Below) The chromosome number is reduced in the formation of pollen and egg cells. The 10 chromosomes of the tree peony are shown associated in 5 pairs in a pollen mother cell. The separation of paired members is complicated but the two divisions result in the reduced or 1 N chromosome number in pollen and egg cells. At fertilization the chromosome number is doubled.



The chromosome cycle in cell division is shown by the photographs of cells of a conifer. The loosely coiled chromosomes of the resting stage contract at prophase (1). They split lengthwise and shorten into rod-shaped bodies with the two halves closely associated. They become oriented (2) so that when they divide the daughter chromosomes pass regularly to the daughter cells (3 and 4). The daughter chromosomes of the new cells then pass into the "resting" stage to complete the cycle.

tion of chromosomes, and their duplication at the time of fertilization, is the mechanism for Mendelian inheritance.

Many horticultural genera of plants have species and varieties with multiple numbers of chromosomes. For example, there are species of strawberries with 7, 14, or 28 pairs of chromosomes, and cherries with 8 or 16 pairs of chromosomes. The species and varieties with the higher multiples of chromosomes are called

polyploids. These polyploid species or varieties are of two general types. The first type results from the duplication of the diploid set of chromosomes of the species or variety, and are known as autopolyploids. For example, the doubling of the chromosomes of the common marigold results in an autopolyploid with somewhat longer flowers and thicker leaves.

Autopolyploids may arise from chromosome doubling in the vegetative tissue or by a failure of the reduction division so that the pollen grains or egg cells carry 2 sets of chromosomes. The union of an unreduced pollen grain with a reduced egg cell produces a plant with three

sets of chromosomes known as triploids. Due to chromosome unbalance these triploids are only partially fertile, although usually vegetatively vigorous. In plants which do not require much seed set for fruit development the triploids are of value. Some of our best apple varieties are triploids—Baldwin, Rhode Island Greening and Stark. Tetraploid apples occur in nature, but commercial varieties have not yet been developed. (Continued on page 28)

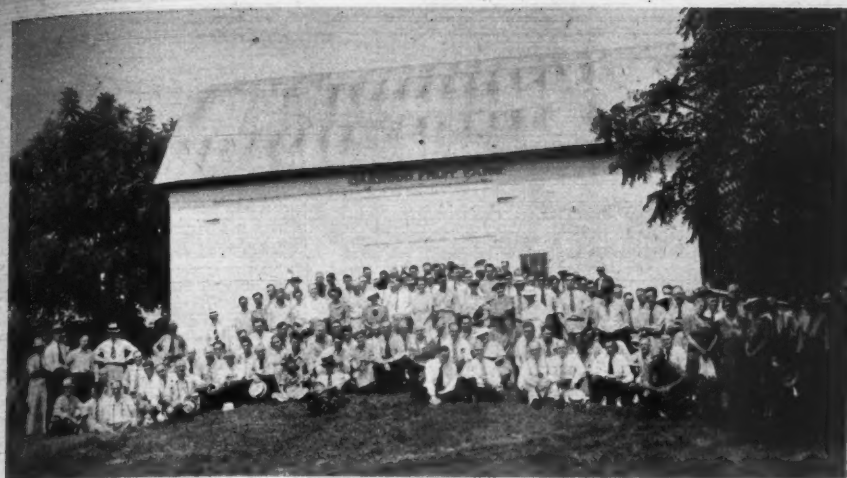
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Members of the Ohio Horticultural Society attending the 1940 summer meeting.



Nicholas Longworth, who visioned the "Rhineland of America" on the Ohio River, and pioneered with the strawberry.

PAGEANT OF OHIO HORTICULTURE

By ELDON S. BANTA

GAYLY romantic at times, deeply tragic at others, and occasionally legendary is the narrative of horticultural development, change and progress in the state of Ohio. An ever-occurring thread in the narrative is the work of the Ohio Horticultural Society which has helped direct the path of Ohio fruit growers since its founding, 100 years ago.

The beginning of the Ohio Horticultural Society followed the founding of commercial fruit growing in Ohio. Marietta, the first permanent settlement in the Ohio country, was founded in the year 1788 with General Rufus Putnam, a colorful officer of the Revolutionary War, as its leader.

In 1790, Aaron Waldo Putnam, a close relative of the General, who was only 20 years of age, risked his life to cross the Indian inhabited country

from Connecticut to the new colony. Within his saddlebags he carried 23 varieties of apple scions wrapped in beeswax. They were grafted on seedlings already growing in the Putnam nursery near Campus Martius. Four years later, Israel Putnam brought more scions from Connecticut to Ohio and grafted them on seedlings near Belpre on the Ohio River.

The journals and diaries of early pioneers of Marietta reveal among other things the growth of fruit grow-
(Continued on page 33)

The Ohio Horticultural Society will celebrate its one hundredth anniversary, Feb. 26-28 at Columbus. To the oldest farm group in Ohio and one of the oldest horticultural groups in the nation, this story is dedicated.



Thomas E. Thornburg, oldest living member of the Society, photographed in 1921. He is honorary president, and has been active in Society affairs for 66 years. He is standing beside a heavy-bearing Grimes Golden tree in his orchard.



Nelson Cox, father of U. T. Cox, one of the pioneer fruit growers of Lawrence County, and influential in establishing the Rome Beauty apple.



Growers in the early days of Ohio horticulture were fortunate to have a truck as shown above.

NATIONWIDE FRUITS

APPLES

Airplane Spraying

The use of airplanes to apply pre-harvest hormone sprays to stop drop of apples lead all other purposes for which airplanes were used in spraying and dusting in Washington during the past year. Fourteen thousand five hundred acres were covered from the air with pre-harvest spray.

An outgrowth of wartime development, the airplane is supplementing ground sprayers in places hard to reach and in extensive areas where time-saving is essential.

Light bi-planes, generally used for the work, carry a 30 gallon tank of spray, enough to cover five acres sat-

isfactorily. As a time saver, one plane, with a one man ground crew, can cover in a day as large an acreage as can six to eight spray crews.

In addition to the hormone spray, other uses for which airplane spraying were employed this year in Washington included 5000 acres of apples, pears, and cherries for little rosette control, 800 acres of apples, pears and cherries sprayed with dormant spray, 75 acres of grapes sprayed for leaf hopper and 300 acres of miscellaneous crops sprayed.

Several experimental programs of dusting apple orchards with pollen to obtain pollination of self sterile varieties or to help pollination during unsatisfactory weather conditions have

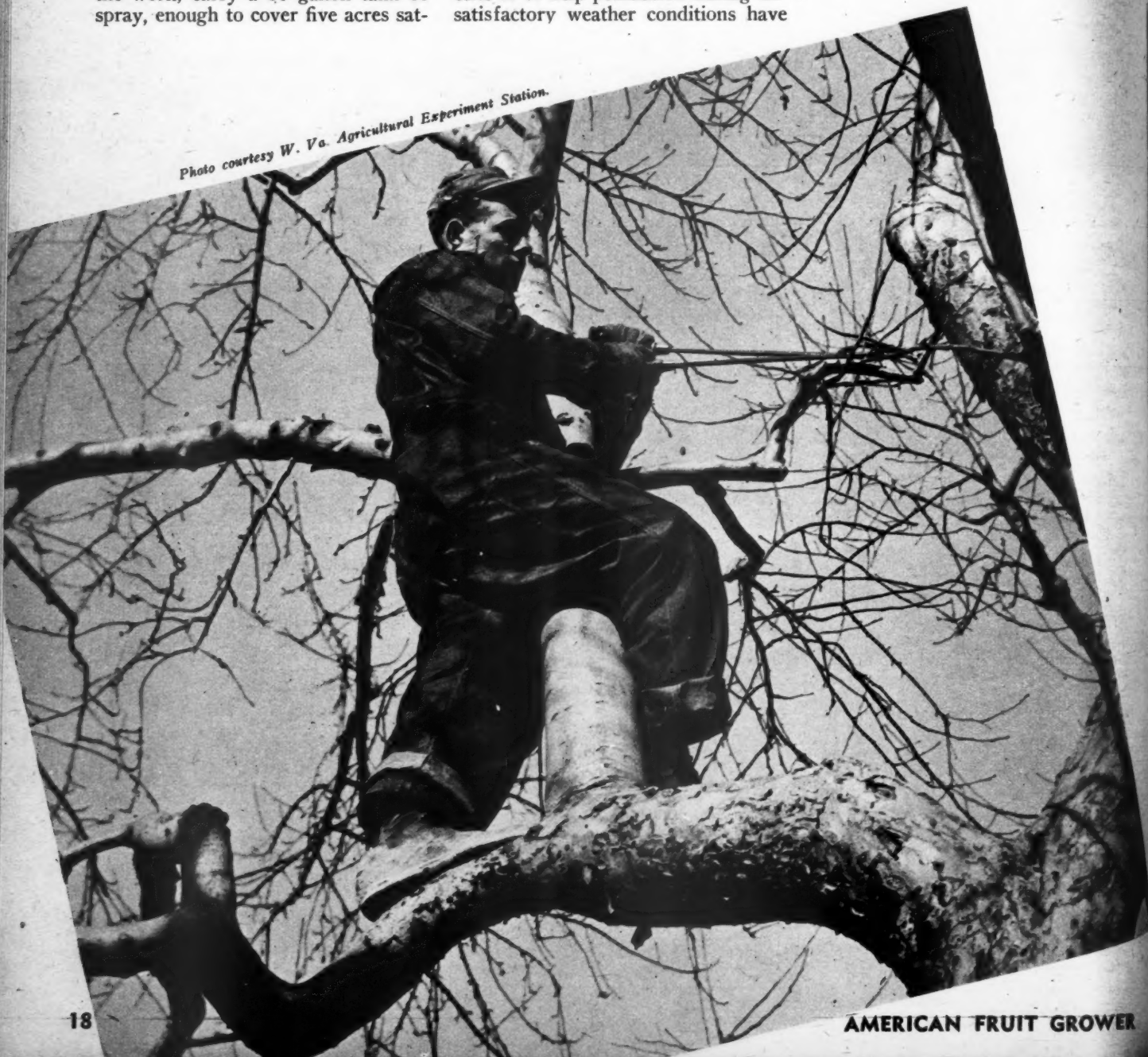
been carried on in the Yakima and Wenatchee districts.

The first actual test of hormone spraying from the air was made on August 8, 1944, on Bartlett pears in the orchard of Herbert Ford.

Increase Efficiency

In order to safeguard orchard investment, fruit growers are urged to plan now to avoid a reversal of the present cost-price situation to one where costs are high and prices low. Apple Research, published by the Washington State Department of Agriculture in cooperation with the Washington State Apple Commission and Washington State College, suggests several ways in which growers can help protect themselves. The bulletin recommends increasing efficiency in every way possible. Growers are urged to avoid heavy indebtedness and to build up a reserve. That grow-

Photo courtesy W. Va. Agricultural Experiment Station.



ers are following this advice is shown by a recent survey of the American Bankers Association. Although the nation's farmers used more bank credit during the past year than ever before, the aggregate of farm debt continues to decrease.

As a further step toward holding the present profit margin in case of a price break, fruit growers are advised to deliver apples of high quality so

Youngberry, Cameron, Rossberry and Boysenberry were the best yielders. Leading blackberries were Haupt, Crandalls Early and Dewblack.

White Blackberry

The question of what's in a name can be asked again—with the advent of white blackberries. The berries,



James Pike of St. Jacob, Illinois, with his prize bushel containing 48 Paragon Winesap apples. The apples, weighing from 17 to 23 ounces each, were grown in his orchard.

that they may maintain the consumers willingness to pay premium prices and to continue to promote apple advertising so that the public is constantly aware of the value of the fruit.

Training Pickers

Training out-of-state apple pickers in Washington this year paid dividends to fruit growers, and made possible a saving of several thousand dollars. The short training course, given to pickers by the State College of Washington Extension Service enabled the average worker to pick an estimated extra 10 boxes a day. In addition to the increase in speed, the training kept down the loss from stem punctures, bruises and stems pulled out.

BERRIES

Yields

Fourteen varieties of dewberries, and a number of blackberry varieties set during the spring of 1945, produced satisfactory yields this year at the Georgia Experiment station where they were being tested.

Of the dewberries tested, the

found growing wild on the farm of T. C. Elliott in Montgomery county, Virginia, are pure white, except for a tinge of brown found on the riper berries, thought to be caused by the rain.

Crown Borer

Satisfactory control of the raspberry crown borer has been achieved by the use of DDT sprays at Hammondton, N. J.

Tests were conducted last fall by the New Jersey Experiment Station, with the first application made on September 20 and a second one made on October 4. The spray was one pound of actual DDT per 100 gallons of water plus a quart of summer oil to make the spray stick.

At the end of November examination of the canes showed a near clean-up of the borers. In March another examination in an area which was not sprayed yielded 74 live borers from 11 canes, and only one live borer from seven canes in the sprayed area.

CHERRIES

Starlings

Successful localized control of starlings, which cause severe damage to

cherries and sweet corn in New York, has been reported by Cornell University Agricultural Experiment Station after three years testing.

Working on the theory that the birds never nest in bushes or trees, but seek crannies in buildings or holes in trees, nesting boxes were placed in the most desirable locations, which proved to be roadside telegraph poles. Once the birds accept these convenient nesting places, both the eggs and the birds may be easily destroyed. Localized control of the bird prevents extensive damage to cherry crops, without destroying the benefits of starlings in other areas.

CRANBERRIES

New Magazine

Bringing to cranberry growers the latest information about their cooperative exchange, the magazine Cranberry World made its initial appearance in November under the sponsorship of the American Cranberry Exchange, Inc.

The Exchange includes growers in the New England Cranberry Sales Co., the New Jersey Cranberry Sales Co. and the Wisconsin Sales Co.

NUTS

Pecan Rosette

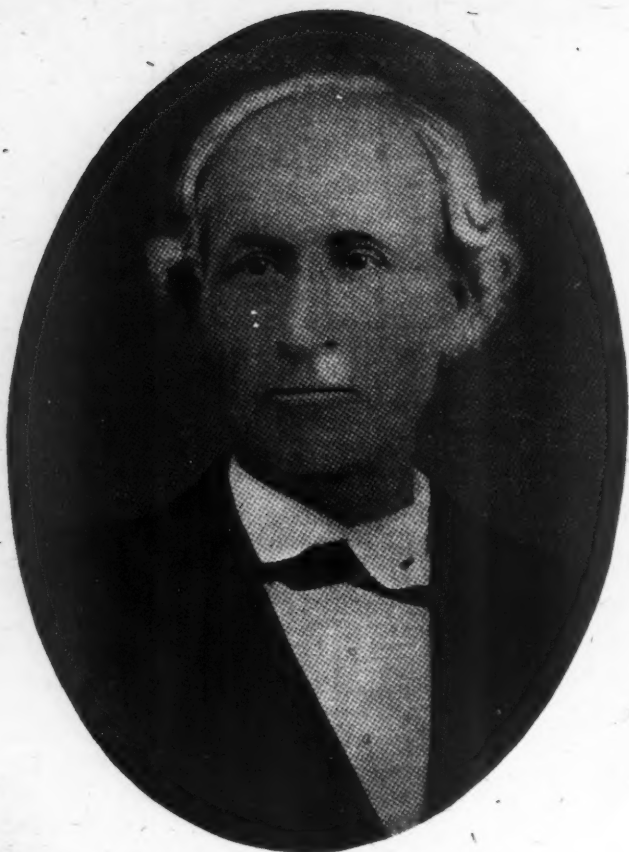
Zinc sulphate has been found effective in combating a pecan rosette according to Dr. Frank B. Cross, horticulture professor at Oklahoma A. and M. college.

Rosette, which checks tree growth is counteracted by the stimulation of zinc. The zinc sulphate may be used by soil application, by trunk injection or by spraying. The two latter methods have proved most effective for immediate results, relieving the rosette condition the first year. Soil applications usually do not give complete control until the year following the time of application.

Marketing

For better prices in nuts, it is suggested that growers keep their varieties separate. They should be packed in good bags, 100 pounds to each bag for large lots, and each bag clearly marked as to the variety it contains.

Hazel Meacham of the University of North Carolina, in charge of Extension marketing, says that small lots of nuts can be marketed through local buyers, but that in some sections it will pay producers to grade, bag and market their nuts cooperatively.



PETER GIDEON and the Wealthy Apple

THE vast amount of patience and the ability to overcome trying obstacles needed in propagating new varieties, so well known to those who work in this field, is well illustrated in the story of Peter Gideon and the Wealthy apple. With practically all his money lost in earlier unsuccessful attempts, Peter Gideon refused to be discouraged and spent the last of his family's small sum of money for the seed and scions to be used in one more attempt to develop new varieties. The success of this last attempt is a milestone in American fruit breeding progress. For Peter Gideon's faith was rewarded with the Wealthy apple, which stands as a monument to his memory for all time.

Son of American pioneers, Peter Gideon was born near Woodstock, Ohio, February 9, 1820, three years after the family had emigrated to Ohio from Virginia. From earliest youth the boy was interested in fruit culture and before his ninth birthday had raised peach trees from which he gathered fruit.

During his boyhood the family left the homestead and moved to a farm

without fruit trees. At the age of 11 young Peter planted apples, peaches, cherries and currants and again began to furnish the family with a profusion of fruit.

With this background in fruit growing, it was only natural that the boy, now grown to manhood, should continue to have a keen interest in orcharding when he and his wife, the former Wealthy Hull of Illinois, and their two daughters moved to Minnesota. Here in 1858 the family took up a claim of 160 acres on Gideon's Bay, Lake Minnetonka, and for the next forty-one years he carried on his fight against the climate to develop a fruit for Minnesota growers.

The first year he set out 500 trees, including apple, pear, plum, cherry and quince, and planted one bushel of apple and a peck of peach seeds. For eleven years he made annual additions to the orchard and planted enough southern and eastern apple seeds to grow a thousand trees each year.

Time and again killing frosts destroyed his work, but with indomitable spirit he always began again, putting to use experience gained from his

failures.

Gideon himself tells, in his reports made in 1885, how, at the end of ten years, a hard winter killed off all his trees, and with them, all hope of apple culture in Minnesota. Discouraged, he resolved to leave the state, but decided to try just once again.

With a large family to support, and with one cow and a few chickens as his only asset in the long winter months ahead, Mr. Gideon nevertheless took the last eight dollars which the family possessed to send to Maine for seeds and scions. He himself, in sore need of clothing for the winter, sewed together two old vests and by reinforcing patches succeeded in making for himself a winter suit, "more odd than ornamental." By such personal sacrifices Gideon added millions to horticultural wealth in the cold Northwest.

From the scions which he got from Albert Emerson of Maine, he developed the Oldenburg, Blue Pearmain and the Cherry Crab. But the full sized apple which he developed from the seed of a Siberian crab was destined to become the most famous of all his species. It was the Wealthy, named in honor of his wife. These four varieties and a seedling crab brought from Boston by Alexander Buchanan, were the foundation of Minnesota apple culture.

The introduction of the Wealthy proved a boon to the Northwest and marked an epoch in American apple growing. The first published notice of the Wealthy appeared in the Western Farmer in 1869. Although it is not ironclad in cold endurance and consequently not successful in the coldest portions of the Old Northwest, it was far superior in quality to the Russian varieties which were being introduced in the North at about the same time. Dependably productive and attractive in appearance throughout a wide climatic range, the Wealthy had too delicate a skin to be a "long keeper."

During the rest of his life Gideon tried by blending to evolve a fruit with as fine a flavor and better keeping qualities. From this work he developed several new varieties, chief among them the Peter, which closely resembles the Wealthy, and the Gideon, which though beautiful and productive, is of most importance as a vigorous cold enduring stock. Crab-apples which he developed and which became popular in his district were the Florence, Martha and Excelsior.

Commenting on his work, Gideon said, "Perhaps I would not be far from the truth to say about one to each 500 seedlings, with good care in selecting seed, will produce a fair sized, first class apple, as hardy in tree as the Wealthy or Oldenburg, but

(Continued on page 40)



A fine McIntosh tree.

150th BIRTHDAY Of An Old Timer

*The McIntosh Apple is still
a favorite after a century
and a half of success...*

AN honorable old member of the apple industry passed its 150th anniversary in Canada last year, and apple growers and consumers joined in observing this birthday of the McIntosh apple, discovered growing wild in 1796 by John McIntosh.

A history of great production and wide popularity of the McIntosh apple is confirmed by the present extensive plantings in Canada and the United States.

As with a great many other important discoveries, chance played an important part in the history of the McIntosh apple.

Young John McIntosh had left his home in New York's Mohawk Valley because of a disagreement over a love affair. He crossed into Canada at Cornwall, and found that his sweetheart, who had preceded him, had died. He then pushed up the St. Lawrence River to Iroquois.

Here he met Hannah Doran, whom he courted and wed. They moved on to the county of Dundas, in the province of Ontario and settled at a place called McIntosh corners at the time, and now known as Dundela.

After building a home, he began clearing the land for his farm, and it

was at this time that he discovered a jewel in the wilderness—a clump of twenty young apple trees, no more than a year old. They had apparently grown from apple cores discarded by a previous traveler.

Young John carefully replanted these trees in a plot near his home. Around the turn of the century the trees began to die out slowly until, in 1830, only one of the original twenty trees remained.

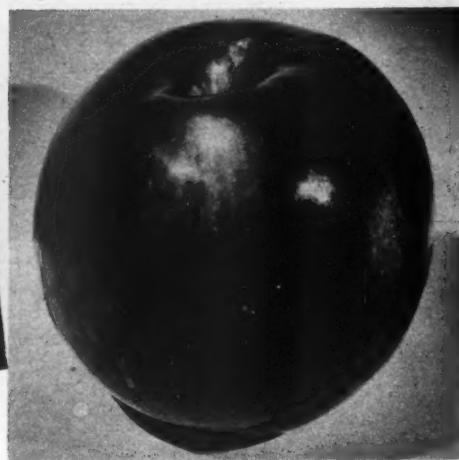
This tree bore abundantly a fruit of a color and flavor to attract the attention of the settlers in the whole district. John's neighbors were much impressed with the quality of this apple. It had a distinct aroma, was crisp and juicy and had a pleasantly sub-acid taste.

Since John's wife took care of the tree, family and neighbors began to refer to the fruit as "Granny's Apple."

As the reputation of the tree spread and the apple became well-known for its unusual qualities, the settlers thought it a great injustice that so fine a fruit had no real name. Whereupon, John McIntosh combined his last name with the color of the apple, and the McIntosh Red was introduced to apple growers as a new variety.

While the apple enjoyed great and immediate popularity near its home, national recognition was slow in coming, and the final success of the McIntosh in Canada must be credited to the efforts of Senator Smith, a prominent grower in the early 1800's.

In early reports of the Ontario



A Pennsylvania McIntosh apple.

Fruit Growers' Association, there are several accounts of heated discussions about the commercial qualities of the new McIntosh Red. Many of the growers opposed growing this new variety.

Senator Smith, however, was quite convinced of the outstanding merit of the McIntosh Red, and planted it extensively in his orchard. As a result of his success, the McIntosh was accepted as a commercial variety.

Recognition followed in other provinces, and the popularity of the apple soon spread to the United States, where it was planted in northerly climates, particularly in New York, just after the First World War.

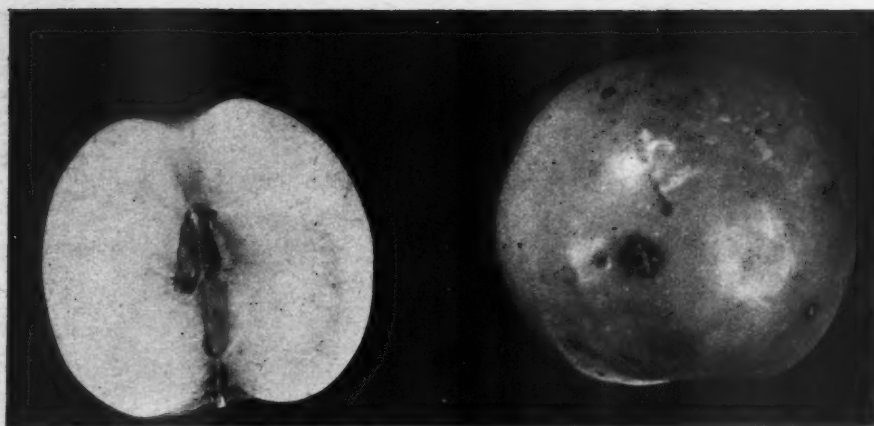
The name McIntosh, with various spellings, originated in 1163 when Shaw McDuff, nephew of King Malcolm IV of Scotland, was appointed governor of the rebellious tribes of the Moray district in Scotland. He was designated TOISICH, leader or chief, and his followers called MHIC-AN-TOISICH, sons of the leader.

Thus McIntosh is an apt name for the apple which is a leader in the fruit industry.

The original tree no longer stands. In 1894 fire destroyed the house beside which the tree stood, and the tree was so badly damaged that it died in 1906, after struggling to live in the intervening years.

Trees now standing in the orchard of the original McIntosh farm were propagated from scions of the original
(Continued on page 40)

Information used in this story was obtained from the following articles which were published in the CANADIAN HORTICULTURE AND HOME magazine: "The 150th Anniversary of the McIntosh Apple" by D. S. Blair, and "History of McIntosh Family in Canada" by Dr. P. A. MacIntosh.



The Redflesh crabapple.

BREEDING HARDY FRUITS

(Continued from page 12)

all combinations made for the first time.

1. Native plum x Japanese plum. Waneta and Kahinta, the two first 2-inch 2 ounce plum. Heavy bearers and widely popular.

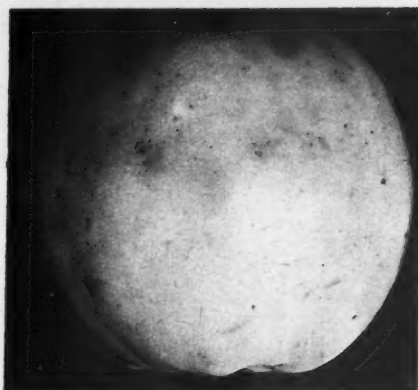
2. Native sandcherry x Japanese plum, such as Sapa and Opata and Oka. These two species hybridize easily and the hybrids are very fruitful, bearing on one-year-old wood. They are a cross between a bush and a tree and are best grown in bush form. Very popular far north into Manitoba and south into Texas. Generally listed as cherry-plums or plum-cherries. Hybridizes with many other species. In all, some twenty-five named hybrids. Of the red-fleshed Sapa there are orchards of 25 acres or more in the Twin City Minnesota region. Five pound jars of Sapa plum jam are popular and widely sold. The fruit is put into deep freezers when picked, and when processed later, is put into boiling water. It is quite an industry.

3. Native plum x Chinese apricot plum, *Prunus Simoni*. The resulting hybrids such as Hanska, Kaga, Toka, and Kota are noted for firm flesh of remarkable fragrance and high quality. Kaga is a good pollenizer for other plums. Tokata is a reciprocal hybrid with *Prunus Simoni* as the female parent; is also remarkable for quality and fragrance. These are fancy fruits worthy of the highest price.

4. Taming the native sandcherry resulted in the Hansen Bushcherry by selection through 17 generations and over two million seedlings. Budded on native plums, these selections bear enormous crops. Blended with other fruits such as rhubarb, apples, pineapples and raisins, the result is an excellent canning sauce. At home on the driest prairies.

Apricots

Apricots date back to southern Chi-



The Goldo apple, cross of Duchess and Grimes Golden.

na and in five thousand years have not increased in hardiness. With us they still are confined largely to California. But in 1924 I found apricots at their northern limit of 50 degrees below zero in the Harbin region, north Manchuria. I collected seed and grew 45 seedlings. Twelve varieties were selected and named. In the spring of 1944 I introduced one with still larger fruit. This opens up a new era in apricots. These northern apricots are smaller, but of excellent quality. They must be budded on their own seed-

lings, on *Prunus Sibirica*, or on peach. They bud on Sandcherry also, not fully tested. They are not adapted to native plum roots. The budded trees make a very strong growth in the nursery. One year buds on peach stock sometimes measure one-inch on the caliper at the first season.

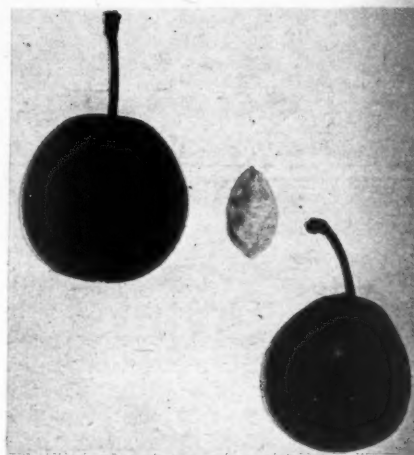
Grapes

The Concord is not hardy far north on the prairies. By crossing the wild South Dakota grape with eastern commercial grapes, I obtained many hybrids hardy without winter protection. The scarcity of land has delayed their propagation. But they show that the Holy Land grape (*Vitis vinifera*) gives fair size and good quality. The proportion of this species should be more than the present one-fourth to give larger size. No need for winter protection.

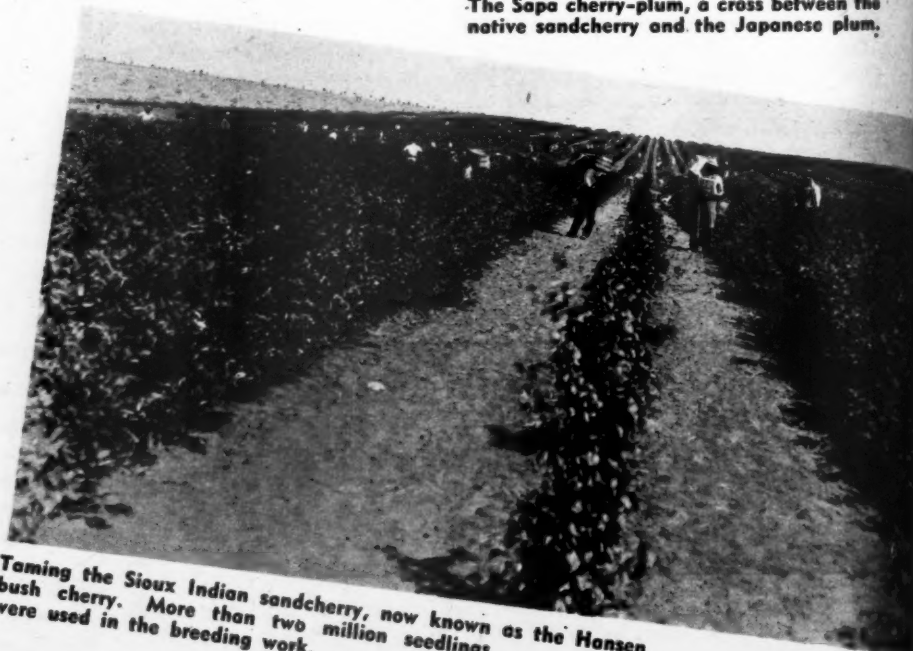
Red Raspberries

The object of my work is to originate red raspberries immune to mosaic and hardy without winter protection. Out of 13,000 seedlings, 8 were

(Continued on page 31)



The Sapa cherry-plum, a cross between the native sandcherry and the Japanese plum.



Taming the Sioux Indian sandcherry, now known as the Hansen bush cherry. More than two million seedlings were used in the breeding work.

ON DOUBLE DUTY!

GUARDING YOUR TREES



Everybody is familiar with Black Leaf 40—But do you realize it does double duty in ridding the orchard, grove and garden of green and rosy aphids, bud moth, pear, psylla, red bug, leafhopper and numerous other insects? . . . Black Leaf 40 kills by contact and by fumes.

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performs an additional service. . . Being non-volatile, it sticks through driving rains, and is especially valuable in killing codling moth larvae.

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LOUISVILLE 2, KENTUCKY

REPORT ON GENEVA

(Continued from page 13)

chances of obtaining something desirable.

It may be of interest that Early McIntosh and Milton were derived from a population of only 134 seedlings; Lodi from 150; Macoun from 32; the Medina, Newfane, Orleans, and Sweet Delicious from 351, and Webster from 14 second generation seedlings.

Pears

The pear breeding program has been less extensive than that of the apple. Only 44 seedlings were grown up to 1906 and none of these were named. From 1906 to 1912, 1649 seedlings were set out for fruiting and from 1921 to date 8300. All the named pears that have been introduced, originated during the 1906-1912 period. Six were obtained from Seckel seed exposed to open-cross-pollination and six from either Bartlett or Russet Bartlett crossed with late pears as Dorset, Josephine d'Malines, and Winter Nelis. To date none of these pears have been sufficiently tested to recommend them for general planting. Gorham, a high quality pear of the Bartlett type, ripens a little later

than Bartlett but unfortunately it is susceptible to blight and its productiveness is uncertain. Covert, a still later pear, promises to have value for canning, while Ovid has possibilities as a late pear. The Seckel seedlings as Early Seckel and Cayuga are good in quality but to date must be listed as pears for the home orchard. Since pear blight is one of the main limiting factors of the pear industry many crosses have been made with the hopes of obtaining resistant types.

Seedlings set out for fruiting.

than Bartlett but unfortunately it is susceptible to blight and its productiveness is uncertain. Covert, a still later pear, promises to have value for canning, while Ovid has possibilities as a late pear. The Seckel seedlings as Early Seckel and Cayuga are good in quality but to date must be listed as pears for the home orchard.

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Plum and Cherry

Plum and cherry breeding have not been too successful due mainly to the failure to secure large populations. Ordinarily only one seedling is de-

rived from one fruit and generally speaking the set on the crosses has been light. Again in the case of the cherry where early-ripening mother parents were used considerable rotting of seed occurred during stratification. One notable exception was the Seneca cherry which is a very early black and makes a splendid home cherry provided the fruit is protected from the birds. From six seedlings obtained from Napoleon crossed with Giant, two proved worthy of naming. Sodus, a light-colored cherry ripens just before Napoleon, while Gil Peck, a firm-fleshed black ripens after Napoleon. The main objective in cherry breeding is to obtain varieties of sweets which ripen throughout the season and which are productive, resistant to diseases, cracking, and winter injury and suitable both for the maraschino and dessert trade.

The four plums named and introduced have all come from the seed produced during the period of 1906-1913. Stanley, the best commercial variety of the four, was secured from three seedlings obtained by crossing Agen with Grand Duke. Hall and Albion came from only four seedlings obtained by crossing Coe Golden Drop

with Grand Duke, and American Mirabelle from three seedlings of Imperial Epineuse by Mirabelle. Less than 1000 plum seedlings have been grown and this number should be materially increased for better commercial kinds ripening throughout the season are needed.

Peach, Nectarine and Apricot

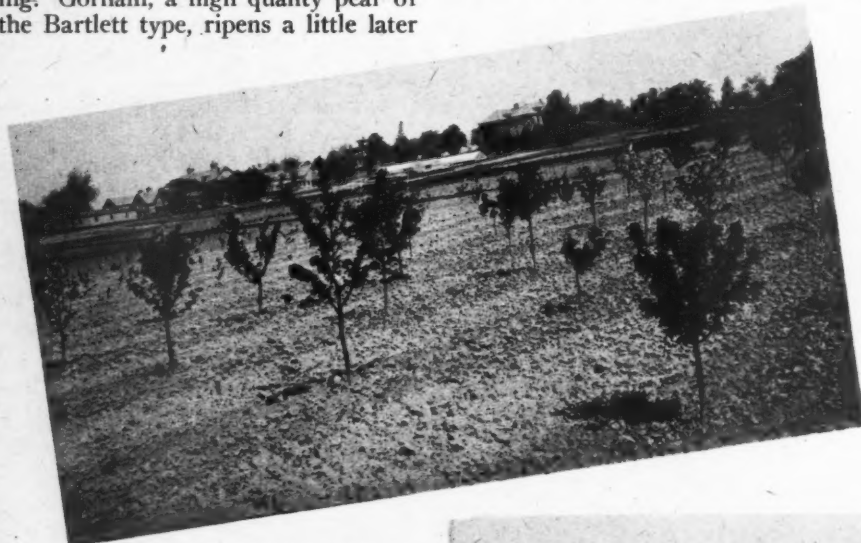
The breeding of peaches, nectarines and apricots has not been overlooked and in fact an extensive program in breeding peaches is now underway. A few seedlings have warranted further testing but to date only the Geneva apricot has been sent out. This variety originated from seed obtained by the U. S. D. A. from Italy.

Grape

The grape has proved to be one of the most interesting fruits for the breeder due to several species involved and the wide variability of the seedlings. Approximately 40,000 seedlings have been grown, over 34 of them at Geneva and the remainder at Fredonia. To date 30 varieties have been named. A few have been discarded for one reason or another, but a number of them as Ontario, Portland, Seneca, Van Buren, Fredonia, Golden Muscat, and Sheridan have already become established varieties in certain localities. Others offer promise at least for restricted areas. In this category may be listed Athens, Buffalo, Dunkirk, Kendaia, Keuka, Ruby, Schuyler, Steuben, Westfield, Yates, and Interlaken Seedless.

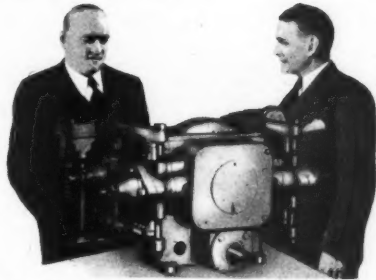
For over 25 years, Dr. A. B. Stout of the New York Botanical Garden has been cooperating with the Experiment Station in the production of hardy seedless grapes. To date he has obtained over 300 seedless seedlings. Three have already been named and a few others show considerable promise. Interlaken Seedless was intro-

(Continued on page 30)



A block of seedlings growing in a nursery.

TRY THIS QUIZ! *Test your Knowledge* of *Spraying* WITH THE "GRIEF" REMOVED



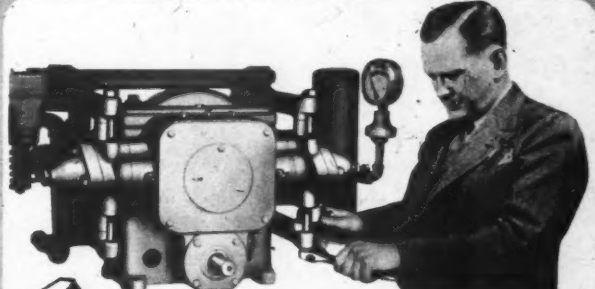
1. On the simplest spray pump built, the cylinder walls must be replaced for wear every 2 years ☐ 5 years ☐ 20 years ☐



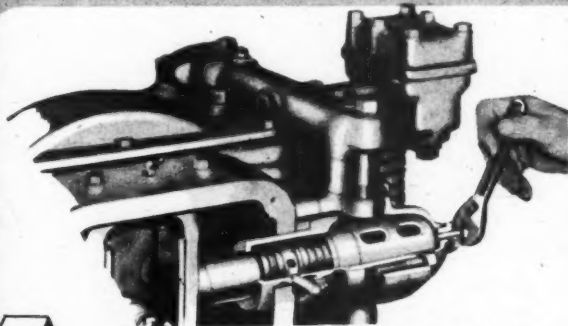
2. No known method of lubricating a spray pump's plungers can reduce the wear to almost nothing. True ☐ False ☐



3. You can buy a high-pressure spray pump that hasn't one plain sleeve bearing. True ☐ False ☐



4. The least time required to remove a sprayer valve (cage, ball and seat) for cleaning is 3 seconds ☐ 30 seconds ☐ 3 minutes. ☐



5. Every spray pump must be taken apart and repacked when it starts to leak. True ☐ False ☐

If you answered all 5 of the questions correctly, you probably have owned "Friend" Sprayers—and have learned from experience that **only the "Friend" gives you these 5 advantages.**

FRIEND MANUFACTURING CO.
Gasport, N. Y.

Sprayers • Dusters • Fruit Sizers & Cleaners

"FRIEND"

- ANSWERS—**
- 1.** If you checked 20 years, mark it right—the correct answer is NEVER. The "Friend's" plungers don't touch the cylinder walls. No wear at all.
 - 2.** FALSE. Grower after grower has used his "Friend" pump for years—in some cases more than 5 years—without changing either the plungers or packing.
 - 3.** TRUE. By using Timken roller bearings, "Friend" practically eliminates friction and wear, and assures permanent accurate alignment.
 - 4.** Mark 3 seconds correct. On a "Friend" pump you just loosen a hex-head screw and the valve comes out INSTANTLY. (Seats are smooth—not threaded or tapered).
 - 5.** FALSE. The "Friend" pump's packing is taken up instantly by a slight turn of the adjustment screw, as illustrated.

ATTENTION APPLE GROWERS!

Clean up European Red Mite and Aphis Eggs on Your Dormant Trees

FREE MULSION

Now is the time to inspect your orchard to see if it is infested with European Red Mite as a result of spraying with DDT last summer.

Look sharp for Red Mite eggs on the bark of your trees. If you find them, clean up your orchard at once by using Sherwin-Williams Free-Mulsion—a high-quality dormant oil spray that gives high deposit for maximum control.

S-W Free-Mulsion is an improved, concentrated oil emulsion of a heavy, creamy consistency, made from a high-grade oil and non-soap emulsifier.

When Free-Mulsion is mixed with water, it forms a white, stable emulsion that gives effective control of European Red Mite and Leaf Roller, as well as San Jose Scale.

DINITROL

If you find your apple trees infested with aphis eggs and they caused serious damage to fruit and foliage last year, use Sherwin-Williams Dinitrol in combination with S-W Free-Mulsion.

Dinitrol kills the eggs of rosy aphis and green apple aphis in the dormant period. Thus, it is cheaper to use Dinitrol against aphis than to spray during the growing season with nicotine sulfate.

S-W Dinitrol is a dry powder containing dinitro-ortho-cresol and is recommended for use with all properly made oil emulsions or miscible oils as a dormant spray on apple trees. Spraying with Dinitrol should be completed before any signs of leaf growth appear.

DINITRO-SOL

In case your orchard is found to be free from European Red Mite but is infested with aphis, we recommend Sherwin-Williams Dinitro-Sol which can be used alone to kill aphis eggs.

S-W Dinitro-Sol is the sodium salt of dinitro-ortho-cresol and does not have to be mixed with oil since it is water-soluble. Thus, it is a convenient spray for growers who are not troubled with Red Mite but do want a highly effective dormant spray to kill aphis eggs.

Both Dinitrol and Dinitro-Sol are also valuable when used as dormant sprays to destroy scab spores on old apple leaves on the ground, thus effectively checking the spread of scab infection next season.

Write for further details about the use of these three important Sherwin-Williams products for successful dormant spraying.

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WEST VIRGINIA—West Virginia farmers and gardeners will find it easier to buy the proper spraying and dusting materials in 1947, says C. Frank Bishop, assistant Extension plant pathologist, of West Virginia University, Morgantown.

A new approach to the problem of disease and insect control was made recently when representatives of 13 chemical companies met with representatives of the state's merchants and county agricultural agents in Morgantown. Purposes of the meeting were:

1. To acquaint manufacturers with the recommendations of the West Virginia Agricultural Extension Service and the State Experiment Station, sponsors of the conference.

2. To insure that proper materials will be made available at local dealers.

3. To see that merchants and their employees are informed on the use of these materials.

Consumer service was the theme of the meeting, Bishop states. Manufacturers were asked to put more energy into satisfying this market.

County agricultural agents present were W. E. McComas, Marion; H. B. Thomas, Raleigh; I. C. Boggess, Barbour; and H. P. Muffy, Monongalia.

NEW YORK—The New York Horticultural Society has an excellent way of assuring that members will have their fruit-growing questions answered at the

Annual Meeting.

The Society sends out a postal card, with an addressed return card attached, asking members to write their questions on the card and return it to the Secretary of the Society. In this way, the program committee insures that the questions troubling New York growers will be answered at the meeting.

MICHIGAN—The Annual Fruit Growers' Conference held by Michigan State College at East Lansing will meet January 14, 15 and 16, 1947, according to C. A. Langer, extension horticultural specialist, chairman of the program committee.

IOWA—Features of the Little Midwest Horticultural Exposition staged by the students of horticulture at Iowa State College November 15-16 were the Experiment Station displays and the fruit show.

Entries in the fruit show were limited to students with Professor Russell Eggert of the staff judging. Classes were in Jonathan, Delicious, Grimes, Sharon, Willottwig, Edgewood, and Hawkeye Greening for the upperclassmen and Jonathan, Delicious, and Grimes for the freshmen. High point winners were Dan Millikan for the upper classmen and Joe Hoopes for the freshmen. Highpoint show winners were Jim Little and Dan Millikan, tied with 35 points.

Progressive as well as interesting work in citrus was shown in the collections



The fruit display of the Little Midwest Horticultural Exposition filled the stage of the Catherine McKay auditorium at Iowa State.

sent in by Dr. Ira Condit of Riverside, California; Dr. A. F. Camp of Lake Alfred, Florida; and Dr. Paul Harding of the U.S.D.A., for the experiment station display. Equally interesting and contrasting collections of sub-tropical fruits were sent in by Dr. Harding, Dr. Condit, and Dr. George Ruehle of Homestead, Florida. Not only were the standard varieties shown but the products of controlled breeding were portrayed.—Dan Millikan, Pomology Supt., Little Midwest Horticultural Exposition.

TEXAS—Back in 1913 the late Helge Ness crossed the wild dewberry with a red raspberry. The second generation of this cross was fully fertile and a later selection was introduced as the Nessberry. The variety has a delightful flavor and is perfectly adapted to conditions in East Texas, but it was unpopular because of poor picking quality and difficulty in propagation. Realizing this, Ness later crossed his hybrid back to the wild dewberry. Selections of this backcross were self-pollinated by the writer in the early 1930's, and several selections were tested at College Station and elsewhere. Three of these have proven to be so outstanding they are being named and released for general planting.

Earli-Ness: (R40-4). No variety yet introduced approaches this one in earliness. In the 1946 test it began to ripen on April 18, while strawberries were still in production.

Big-Ness: (R40-51). The fruit of this variety is outstanding in size. It is too soft to ship well, but because of its large size and earliness it makes a very desirable home garden variety.

Regal-Ness: (R40-202). This variety comes into production about a week later than Earli-Ness, but is very similar in most of its fruit and vine characters. It was selected to continue the commercial season.—S. H. Yarnell, Chief, Division of Horticulture.

DISPLAY 20,000 MAINE APPLES



At the left in this display of 20 thousand apples is Myron C. Lord, manager of the Maine Fruit Producers, Inc., a marketing cooperative; and right is William Deane Haskins, chairman of the Maine Apple Committee.

AMERICA'S FAVORITE SPARK PLUG



BEST
FOR EVERY FARM
USE

DEPENDABLE

CHAMPIONS

"Deliver The Goods"

In season and out farm cars, trucks, tractors and other engines are the essential equipment which keeps farm life and farm production moving. That's why most farmers are critical buyers not only of original equipment, but of service and service parts. Performance and dependability of every farm

engine at all times are necessities. That's why dependable Champion Spark Plugs are the overwhelming favorites of the American farmer—why we remind you now, to insist on Champions when you need new spark plugs. They're best for every farm use. Champion Spark Plug Company, Toledo 1, Ohio.

Listen to the CHAMPION ROLL CALL, Harry Wismer's fast sportscast every Friday night, 9:55 EST over the ABC network.

MECHANISM OF HEREDITY

(Continued from page 16)

veloped. In the pear varieties, however, a valuable tetraploid has been found in England. The autotetraploids usually have somewhat larger fruit and perhaps a higher vitamin content. Artificial production of polyploidy in trees has met with little success, but polyploids should be of value in certain horticultural crops.

The second type of polyploidy originates from a sterile or partially sterile species hybrid by doubling the chromosome number. In such hybrids the chromosomes of the parental species are so unlike that they do not pair regularly at the time of pollen and egg formation, and are consequently sterile. But when the chromosome number of such a hybrid is doubled there are two sets of chromosomes from each parent, and these pair regularly to produce fertile pollen and egg cells. Moreover, such hybrids breed true in subsequent generations. For example, when a cross is made between a radish and a cabbage the 9 chromosomes from each parent do not pair in the hybrid, and the plant is sterile. But if the chromosome number in such a hybrid is doubled the two sets of radish chromosomes pair together, and the plant is fertile. It is in fact a new genus, and breeds true to type. Allopolyploids can also arise from allopolyploid parents without further chromosome doubling.

Polyploidy occurs in nature, and is caused by temperature shock or other natural events. It may also be induced artificially by treating the seedling plants with colchicine—an alkaloid obtained from the autumn crocus, or by temperature shock. The plant breeder can now produce new species by hybridization of species followed by chromosome doubling.

Cytological studies have shown the origin of many horticultural species. The Pomoideae, which includes species of apples, pears, quince, hawthornes, etc., all have a basic chromosome number of 17 pairs. Other members of the Rosaceae have basic chromosome numbers of 7, 8 and 9. The evidence indicates that the Pomoideae originated from a hybrid or hybrids between ancestral species of Rosaceous plants with these basic numbers—7 x 7 and a further duplication of three chromosomes or by a cross of 8 x 9 chromosome forms—followed by chromosome doubling. As a result our modern apples and pears are of complex hybrid origin, and show great variability in minor characters, although they breed true for the characters which differentiate the sub-family.

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Another horticultural species or allopolyploid origin is the common plum. Cytological studies indicated that the garden plum originated from a cross between two Asiatic species, *Prunus spinosa* ($n=16$) *Prunus cerasifera* ($n=8$), in which the pollen of *P. cerasifera* contributed 16 instead of 8 chromosomes, due to failure of the reduction division. The hybrid then had 2 sets of chromosomes from each parent, and was fertile. Rybin of Russia has confirmed, by experiments, this origin of the garden plum, *P. domestica*.

The Cultivated Strawberry

The cultivated strawberry is a hybrid between the polyploid *Fragaria chiloensis*, the Chilean strawberry and the American species *F. virginia*. Both species were introduced into Europe where the cross occurred. Both species have 28 pairs of chromosomes and when crossed produce fertile hybrids. Since the basic chromosome number of *Fragaria* is 7 pairs, both parents are complex polyploids.

The species of *Rubus* range from diploid raspberries, with 7 pairs of chromosomes, to forms of the Pacific Dewberry with 42 pairs of chromosomes. Both auto- and allopolyploids are found in the genus. Most raspberries are basic diploids with 7 pairs of chromosomes, but the European Raspberry includes triploids and tetraploids. New forms of horticultural value have been produced by hybridization. For example, the Loganberry is a cross between the Dewberry, *R. vitifolius*, which has 28 pairs of chromosomes composed of two different duplicate sets of chromosomes, and a raspberry which contributed two identical sets of chromosomes. In the hybrid the duplicate chromosomes of each parent pair together to produce 21 pairs of chromosomes. The hybrid is fertile, breeds true, and is in fact a new species, *R. loganobaccus*.

Cytological studies have shown how new species have originated in nature by wide species crosses followed by chromosome doubling. Many of our most important economic plants have originated in this manner—wheat, oats, potato, cotton, tobacco, plums, pears, apples, strawberries, and forms of *Rubus*. The plant breeder is now in a position to make new species artificially by hybridization and doubling the chromosome number. During the past decade hundreds of new species of grasses have been produced. The horticultural species are more difficult to deal with, but interesting results can be expected eventually.

Everything You've Been Wanting . . .



in a Low-Cost Orchard Tractor

Take this popular-priced Case "VAO" into the orchard and see how much it gives you of the things that count in tree culture. Quick steering and easy handling. Speeds from a crawl up to fast, safe hauling—with real pull in every gear. Case valve-in-head engine that pulls steadily at reduced speed, saves a lot of gear-shifting. Center-line power take-off. Full-swinging drawbar that makes shorter turns, easier; locks automatically when backing or when load pushes ahead.

Larger Case orchard tractors are the full 2-plow "SO" and the 3-plow "DO." All sizes have the ENDURANCE for which Case tractors are known—eager power to keep going full speed for long hours . . . extra strength to guard against mishap . . . low upkeep and extra years of life to keep down total costs of ownership and operation.

Keep in touch with your Case dealer for latest information on tractors, also on offset and tandem disk harrows or other implements you may need. Case harrows are known for their strength and durability, as well as ease of adjustment for clean work under any condition. Send for new tractor catalog; state size that fits your needs, also implements that interest you. J. I. Case Co., Dept. A-13, Racine, Wis.

CASE

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**STRIKE AT
THE ROOT OF
THE EUROPEAN
RED MITE
TROUBLE...
DESTROY
THE EGGS**

European Red Mite is a prolific pest . . . starting from the overwintering egg and building up a big family tree through several broods during the season.

A thorough application of ORTHOL-D Oil Spray in the delayed dormant period strikes directly at the root and source of your Red Mite trouble.

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REG. U. S. PAT. OFF.

ORTHO Phytonomic Oil Sprays are ovicidal and insecticidal in action. Not only are they effective in control of Red Mite in the delayed dormant stage, but also in the summer brood periods. Your ORTHO fieldman will guide you in using these sprays in your orchard.

CALIFORNIA SPRAY-CHEMICAL CORPORATION

RICHMOND, CALIFORNIA

ORTHO
SCIENTIFIC PEST CONTROL
REG. U. S. PAT. OFF.

ELIZABETH, NEW JERSEY

REPORT ON GENEVA

(Continued from page 24)

duced this year and is a high quality, early, white grape.

It should be mentioned that there are a number of seedling grapes now on trial which offer promise for table and wine purposes and will be introduced if they prove worthy.

The use of vinifera varieties has proved of great value in improving the quality of the seedlings but they also contribute to susceptibility to winter injury. The breeder must make careful selections to obtain both hardiness and quality in these hybrids.

Small Fruits

Comparatively little breeding work has been carried on with the currant and gooseberry. Open-pollinated seed of an English variety gave a large-fruited red gooseberry that was sent out under the name Fredonia.

Many thousands of seedlings have been grown of the black, red, and purple raspberries. Fifteen reds were named and sent out for trial. Varieties which are still grown commercially are June, Ontario, Indian Summer, Marcy, Milton, and Newburgh. The use of the Lloyd George of England as a parent gave a new class of berries which again shows the value of introducing new characters regardless of origin.

Of the black raspberries, Bristol is probably the outstanding variety although certain growers prefer Dundee. Evans, an early, and Naples, a late, will probably be superseded by other kinds.

Two of the purples that have made good in many berry areas are the Sodus and Marion.

Twenty-Two Strawberries Named

Twenty-two strawberries have been named and distributed for trial but most of them have fallen by the wayside. The most successful cross was Marshall by Howard which produced six noteworthy seedlings. Catskill has undoubtedly proved to be the leader of the six, although Culver, Clermont, and Camden have their advocates. Dresden, the most recent introduction, is exceptionally prolific where soil and climatic conditions are favorable.

To date none of the Station blackberry seedlings have been named but at the present time a number of promising seedlings are on trial.

Through many years of trial considerable information has been gathered as to which parents are liable to produce desirable offspring. By using these superior parents, the probability of obtaining noteworthy seedlings has been increased. On the other hand, it

AMERICAN FRUIT GROWER

EVA

24)

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becomes continually more difficult to obtain seedlings superior to present kinds as the standards for comparison continually improve. As Professor Hansen of South Dakota aptly said, "When we are breeding apples we are always confronted with the big red Wealthy." Obviously unless a new kind is superior in some respect it is unwise to introduce it, for it simply causes confusion and no benefit to the fruit industry.

There is not a fruit grown that does not need improvement in some respect, such as fruitfulness, resistance to adverse conditions, quality and special uses. The freezing of fruits has brought on special requirements and interest is gaining in the vitamin content of varieties. Fruit breeding is a never-ending but worthy project. It is expensive and requires much labor, land, and untold patience. With the purchase of approximately 150 acres, known as the Cornell Fruit Breeding Farm, land should not prove a limiting factor at the New York Station for many years to come.

HARDY FRUITS

(Continued from page 22)

named. Sunbeam was the first. Starlight is hardy some 200 miles northwest of Winnipeg. The largest, Ohta, was renamed Flaming Giant by a southern nursery and has been found useful. But in late years, with no labor or land available, the problem is unfinished, but the idea is still alive.

Gooseberries

My work with the largest gooseberries in the world is only half-finished. These giant berries are cultivated in England and western continental Europe. I imported some huge English varieties and kept them alive long enough to raise eight fine hybrids with the native gooseberry of the Sioux Valley of South Dakota, out of several thousand seedlings. They are extremely productive and the fruit is of good size. But all are thorny. At Fort MacMurray, north Saskatchewan, in the fall of 1938, I found entirely smooth-wooded gooseberries. It is planned to use this far northern type in the future program.

Plans For the Future

Much remains to be done. Improve all the native species of fruits and ornamentals. Maintain many test orchards, state-owned; and privately owned under cooperation with the State Experiment Stations. Propagate enough to get them fairly tested. Otherwise much of value will be lost through lack of a fair chance. We must breed for better quality in fruits, or face decreasing demand.

Demand

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In addition CLINTON offers many other models with features for special adaptations.



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A.P.S.

Annual Meeting Announced

Conventions are again in order. The A.P.S. has not arranged a general meeting and convention since that of December 1944, held in Roanoke, Va. A meeting was held in Chicago a year ago for the purpose of transacting the general business of the Society.

An announcement of interest to all members, to fruit growers and to State Horticultural Societies is that the A.P.S. will hold a winter meeting in joint session with the National Peach Council at St. Louis, Mo., Feb. 18, 19, 20 and 21. Hotel Headquarters, Coronada Hotel, Lindell Blvd. at Spring Avenue. Members are urged to write directly to the Hotel for reservations.

The peach industry is one of the big fruit producers of America. Dur-

ing each of the past three years, it has produced around 80 million of bushels of one of the world's finest fruits. During each of these years, this record production has been marketed successfully and in an orderly manner. The National Peach Council has done a magnificent piece of work in helping to give the peach much needed publicity. Experiment stations, growers and dealers have cooperated to see to it that peaches were put into consumers hands in the very best possible condition. Much more along this line needs to be done for peaches. And for that matter, apples and pears.

This convention program at St. Louis is planned to bring together authorities in growing, harvesting,

packing and marketing. In other words, the St. Louis meeting is the "sugaring off" place where all of the latest information as it relates to the future of the peach industry will be brought together. The program is being arranged under the guidance of Erich Kerlikowske, President of the National Peach Council, Executive-Secretary Carroll R. Miller of the National Peach Council, Stanley Johnston, President, A.P.S.

The A.P.S. will conduct its annual business session. Several important Wilder Medal Awards are contemplated. During the year the Variety Appraisal Committee under the leadership of John Bregger has collected a tremendous amount of data on the apple, strawberry and peach variety situation. Lately questionnaires have gone out inquiring as to plums and grapes. This is a highly important survey. Bregger will report results at the St. Louis meeting.

Hardy Apple Stocks

Hardy apple stocks are commanding a great deal of attention throughout the middle west and east. Hardy apple stocks have definitely proved to produce longer lived and more productive trees. At least this is true in Iowa where the tough winters keep apple growers in "hot water." Hardy stocks prevent bark killing on the trunk, eliminate collar rot in varieties such as Grimes, and produce strong growing, productive trees. The two leading stocks at present are Virginia Crab and Hibernial. Not all varieties do equally well on each of these stocks. In general, under Iowa conditions, the trees on Virginia Crab grow larger and are more productive than when grown on Hibernial. However Virginia Crab trunks suffer winter damage occasionally, but seldom is such damage severe enough to cause the loss of the trees. On the other hand, we have seen no winter cold enough to damage Hibernial stocks. However, the trees are smaller, less productive, but productive enough. In the Iowa tests it has been found that more varieties do well on Hibernial than on Virginia Crab and some growers are inclined to use only the Hibernial. The real problem is to determine which varieties are best suited for growing on the different stocks. There are many hardy varieties which appear to have the characteristics of a good stock. It remains for experimental tests to uncover those stocks which are ideal for use with our best varieties. It is believed that the surface has only been scratched. Further research with many stocks will likely demonstrate the truth of that statement.—H. L. LANTZ, Sec.-Treas.



"No wonder, Maw, that farmers voted
2 to 1 for those open-tread tires"

That's right—for extra traction, twice as many farmers said they preferred the open tread—the B.F. Goodrich kind of tread—as preferred the other two principal types combined. That was the voting result in a nation-wide farmer poll. And once you use B.F. Goodrich open tread tires, you'll see

why. These tires bite deep, take hold and really pull. Self-cleaning, too. Dirt and trash drop out as the tire rolls. No closed tread joints to clog up. Get the type tread farmers prefer 2 to 1—get B.F. Goodrich tires. An advertisement of B.F. Goodrich—First in Rubber.

OHIO HORTICULTURE

(Continued from page 17)

ing on the banks of the Ohio. One such record written shortly after 1800 says, "Large orchards were planted out, of the finest ingrafted varieties of fruit, by the inhabitants of Belpre, who for many years in advance of other parts of the country sent boat loads of fruit to the settlements on the Mississippi River." Thus Ohio's commercial fruit industry was born in the cradle of democracy and on the banks of the beautiful Ohio River.

About this time B. C. Bateham came to Ohio and established the first farm paper in the state under the title of "The Ohio Cultivator." He possessed a keen understanding of the state's agricultural needs. On September 29, 1847, he called together in Columbus, Ohio, a group of nurserymen and fruit growers for the purpose of discussing fruit names, climate, orchard pests and other subjects. By chance it seems, this was the first meeting of the Ohio Pomological Society, just a hundred years ago.

Ohio Pomological Society

The group met intermittently for a few years with no definite organization. At the meeting held in Columbus, on August 31 and September 1, 1852 the name Ohio Pomological Society was adopted. Officers elected were A. H. Ernst, Cincinnati, Pres.; Dr. J. A. Warder, Cincinnati, vice-pres.; F. R. Elliott, Cleveland, sec.; and M. B. Bateman, Columbus, treas. The total membership of the Society at the outset was 37, and 20 of these resided in Columbus. A. H. Ernst remained president until his death in 1860 when Dr. Warder filled the chair.

In 1867, the name was changed to Ohio Horticultural Society, its present title.

Much of the work of the early Society dealt with the nomenclature of fruits. The approved list of apples reported in 1867 consisted of 42 varieties of which only six or seven are of commercial importance today.

Interesting personalities left their imprint upon Ohio fruit growing through their Horticultural Society. Mention has been made of Dr. J. A. Warder, first president of the Ohio Horticultural Society. A man of diversified talent, he was a physician, author, horticulturist and forester.

Nicholas Longworth

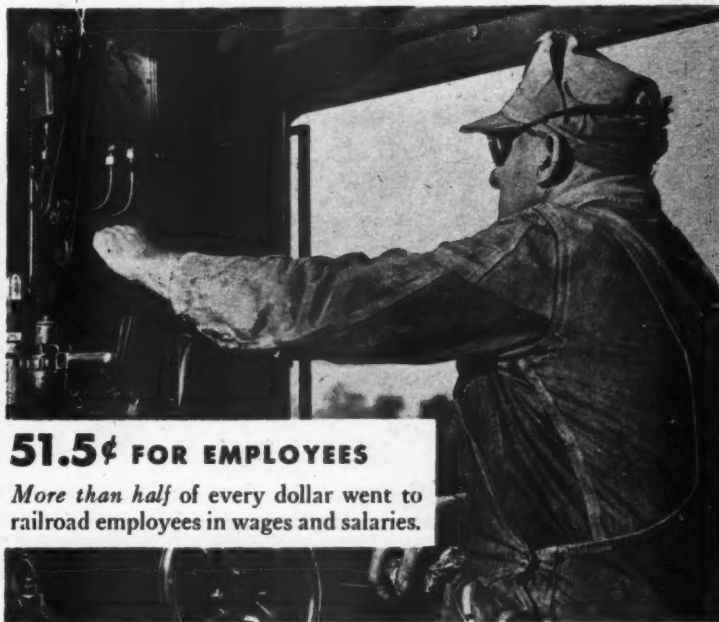
The name of Nicholas Longworth grew into fame and he became "Father of American grape culture." Born in Newark, New Jersey, he migrated to Cincinnati where he hoped to create the "Rhineland of America." Being a banker and business man, he vis-

(Continued on page 37)

WHO gets HOW MUCH of the RAILROAD DOLLAR?

(A REPORT TO THE PEOPLE FOR 1946)

You, and all Americans, look to the railroads not only to take you places, but also to bring you things—food, clothing, fuel, and just about everything else for your home and your business. For this dependable service to 140 million people, and for hauling the heaviest peacetime traffic on record, the railroads received about 8 billion dollars in 1946. Let's see what became of this money.



51.5¢ FOR EMPLOYEES

More than half of every dollar went to railroad employees in wages and salaries.



33¢ FOR MATERIALS

Much of this 33¢ spent for materials, fuel, and other supplies was, in turn, paid by the railroad suppliers to their employees. So, directly or indirectly, by far the largest part of the railroad dollar goes to pay wages.

6.2¢ FOR TAXES

This part of the railroad dollar went to Federal, state, and local governments to be used—the same as your town taxes—to help maintain schools, courts, roads, police and fire protection, and other public services and institutions. None of this tax money goes for railroad tracks or terminals.



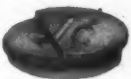
6.6¢ FOR INSURANCE POLICYHOLDERS AND OTHER INVESTORS IN RAILROAD BONDS

Most of this 6.6¢ was paid to those who lend money to the railroads—including millions of thrifty Americans who invest indirectly in railroads through their insurance policies and savings accounts.



2.7¢ FOR IMPROVEMENTS AND OWNERS

And so after paying for wages, materials, taxes and necessary charges upon their obligations, railroads in 1946 had only 2.7¢ left out of each dollar they took in. Out of this they must pay for the improvements necessary to keep railroad property abreast of public needs, before anything is available for dividends to their owners.



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The trend in fruit growing is toward complete feeding...supplying the trees with all of the many plant food elements they need from the soil. That's because experiments have proved that proper feeding really pays.

The big swing is to VIGORO-feeding. Thousands of fruit growers across the land have been using VIGORO for years. They know this plant food increases yields... improves the quality of their fruit, and fosters healthy growth. Many growers report over-the-market prices for VIGORO-grown fruit because it looks better, tastes better, and keeps better.

Get full information about VIGORO before you plan your next feeding. Write Swift & Company, Plant Food Division, Chicago 9, Ill.



It is wise to order your plant food early and take delivery early!

LUTHER BURBANK

(Continued from page 15)

the nightshade. This fruit did possess little value—although it is still being sold under other names—but it certainly was not poisonous.

In 1905 Burbank's friends induced the Carnegie Foundation to subsidize his work by a grant of \$10,000 a year, in the belief that valuable scientific data were being lost because Burbank could not afford to keep careful records. Institutional scientists protested this move as a waste of money. Dr. George H. Shull, a careful scientist, was sent to Santa Rosa to collaborate with Burbank. After five years the grant was suddenly withdrawn and then there was an uproar.

During the half century of Burbank's working life, he introduced over 800 new varieties of fruits, flowers, grains, etc., and a high percentage of them were useful and some became famous. This was especially true of his plums, small fruits, flowers, and at least one vegetable—the winter rhubarb. The Burbank potato, in its variations, is still of great value. The Shasta Daisy, in improved form, is found all over the world.

The Cactus Fraud

Despite these achievements, between the years 1907 and 1914 events transpired which pretty thoroughly discredited Burbank even in the eyes of his erstwhile admirers. Dealers in so-called spineless cactus perpetrated frauds on the public by selling vast quantities of cactus that Burbank never saw. In 1912 promoters and exploiters began to move in to capitalize on Burbank's fame. The Luther Burbank Press was a publishing scheme which undertook to get out a biography of Burbank. To advertise the set of books a so-called Luther Burbank Society was organized, allegedly, to assist Burbank by reading his proofs and making suggestions. While the "Society" was a hoax, the books were published and sold to the "members" at a cost of \$181 for twelve volumes. The biography was only a part of a publishing scheme which led to the selling of tens, perhaps hundreds of thousands, of dollars worth of stock. The whole thing failed and the stockholders lost everything.

About this time Burbank found himself unable to keep up his plant breeding work and maintain a selling organization to dispose of his products. Another bunch of schemers took advantage of the situation to organize the Luther Burbank Company, and Burbank accepted a tempting offer to sell them everything he could produce and thus leave him free to devote all his time to plant improvement. This outfit also sold

(Continued on page 36)

7 NEW APPLES

Developed by ALBERT ETTER

... The "Cream" of 48 Years' Work
... Ready for Immediate Planting

The pioneer apple hybridizer, Albert Etter, made more than 15,000 crosses while developing these new apples... varieties with unmatched sales appeal, and novelties to earn premium prices. Buy direct from the patent owner and grower...



ETTER'S GOLD

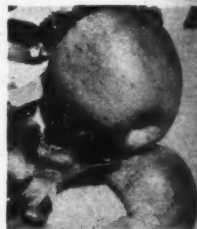
(Pl. Pat. No. 659)

Large, plentiful, golden fruits; crisp and delightful... sprightly sub-acid flavor. Firm, and a good keeper.

JONWIN

(Pl. Pat. No. 710)

Large, beautiful red. Combines best features of Jonathan and Baldwin. Richly flavored... juicy, really tender.



ALASKA (Pl. Pat. Pend.) Almost white, crisp as Alaskan snow. Handsome size. Good producer.

PINK PEARL (Pl. Pat. Pend.) Pink flesh, transparent skin. Rich bouquet. Distinctive novelty.

CRIMSON GOLD (Pl. Pat. Pend.) Red skin, white flesh. Deliciously "melting". Cooking turns flesh golden yellow.

HUMBOLDT (Pl. Pat. Pend.) Creamy flesh, tinted pink. Prolific blooms; ideal for "Home Orchard."

WICKSON (Pl. Pat. Pend.) Crab. Brilliant red. Fruits almost conceal foliage! Sugary sweet for eating fresh.

4'-6' \$1.75 each

3'-4' \$1.50 each

10 trees or more, deduct 15¢ per tree
50 trees or more, deduct 40¢ per tree

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For 82 Years—the standard of excellence. Grown in our foothill properties. Noted for vigorous, heavy, fibrous roots. Buds from superior parents. Write today for

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AMERICAN FRUIT GROWER

IN THE NEWS

SEVER L. HOPPERSTEAD

Sever L. Hopperstead has been appointed service engineer to supervise the development and field work of the new biochemical products being made by the B. F. Goodrich Co.

Hopperstead is a graduate of the University of Illinois, and holds a master's degree from the University of Delaware. Before joining the B. F. Goodrich Co., he was associate research professor in plant pathology at the Delaware Experiment Station, and plant pathologist at the State Board of Agriculture, Dover, Delaware.



SEVER L. HOPPERSTEAD

FRANK FARNSWORTH

Frank N. Farnsworth, nationally noted horticulturist of Waterville, Ohio, is the new state director of agriculture in the Ohio cabinet of Governor-elect Thomas J. Herbert. Owner of a 220-acre Lucas County fruit farm, and past president of the Ohio State Horticultural Society, Farnsworth is a graduate of the University of Minnesota Agricultural College.



FRANK FARNSWORTH

The Ohio representative of the National Cherry Growers' Industry Council, Farnsworth is also a member of the State Board of Agriculture.

T. W. BRASFIELD

Dr. Travis W. Brasfield, new sales manager for agricultural chemicals of the United States Rubber Company, was recently released from the Army Air Forces, where he was executive officer of a B-24 bomb group in the Pacific. Before that, he had been doing intelligence work for the Army Air Forces.

Born in Midland, Arkansas, Dr. Brasfield received his B. A. at the University of Arkansas in 1934, and his M.S. at Iowa State in 1936. He received his Ph.D. at Iowa in 1938.



T. W. BRASFIELD

UNION PACIFIC CHANGES

The appointment of Earl F. Spencer of Shelley, Idaho, as agricultural agent for the states of Colorado and Wyoming, and the transfer of John H. Beckwith from Denver to Omaha were recently announced by J. W. Jarvis, supervisor of the agricultural department of the Union Pacific Railroad.

Mr. Spencer is a native of Burden, Kansas. He majored in agricultural education and minored in agronomy at the University of Idaho. He succeeds Mr. Beckwith, who will become agricultural agent for Nebraska and Kansas.



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★ EASE AND ECONOMY OF OPERATION . . . complete penetration and coverage of foliage are assured with Farquhar IRON AGE Sprayers and spraying equipment.

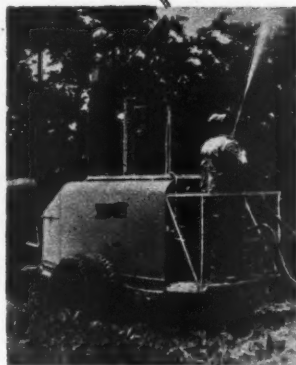
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The Famous IRON AGE Pump

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★ SIMPLICITY OF DESIGN . . . for easy lubrication and maintenance.

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works every inch of cultivating width. Weed and moisture control are so effective that cultivation is required far less frequently than usual.

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Special 1947 menu for all hungry,
chewing insects—

ALCOA CRYOLITE INSECTICIDE

Its smaller, smoother particles are
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Alcoa Cryolite gives better insect
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This means:

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Alcoa Cryolite is compatible with
insoluble-type copper compounds, sul-
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It does not affect soil balance.

Its efficiency has been time tested and
proved.

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ALUMINUM COMPANY OF AMERICA
CHEMICALS DIVISION
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ALCOA
CRYOLITE INSECTICIDE

LUTHER BURBANK

(Continued from page 34)

stock that ran into six figures, but
failed after three years, and again
everybody lost, including Burbank.

The public believed that Burbank
was the originator of these schemes
and his reputation for honesty suf-
fered accordingly. In a moment of
bitterness in 1915, Burbank said to
me, "The Company swindled me out
of everything I had." His loss in
money was great, but loss of prestige
was greater still.

The last ten years of his life was
devoted to the seed business by which
he recouped his losses. He died in
1926 leaving an estate to his wife of
about \$168,000. The book gives de-
tails of the above incidents and other
things which cannot be narrated here.

*All Burbank creations are
now propagated and sold by
Stark Brothers Nurseries Co.,
Louisiana, Mo.—Ed.*

CALENDAR OF COMING MEETINGS AND EXHIBITS

Jan. 2-3—Maryland State Horticultural So-
ciety will hold its 49th Annual Meeting
in Hagerstown, Md.—A. F. Vierheller,
Sec'y.

Jan. 6-7—Western Colorado Horticultural
Society will hold the fourth Annual Meet-
ing at the Mesa College Auditorium in
Grand Junction, Colo.—W. F. Cherry,
Pres.

Jan. 7-9—Massachusetts Fruit Growers'
Association Annual Meeting in Worces-
ter, Mass.—Wm. R. Cole, Sec'y.

Jan. 10-11—Utah State Horticultural Soci-
ety will meet. President J. A. Howell
will preside.—A. Stark, Sec'y.

Jan. 13-15—Pennsylvania State Horticul-
tural Society Annual Meeting at the
Farm Show Building in Harrisburg, Pa.
—J. W. Ruef, Sec'y.

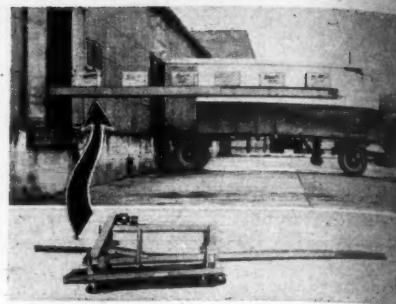
Jan. 14-15—The New Hampshire Horti-
cultural Society will hold its Annual
Meeting and Trade Exhibit in the Hotel
Carpenter, Manchester.—D. R. Batchel-
der, Sec'y.

Jan. 15-17—New York State Horticultural
Society will hold its 92nd Annual Meet-
ing in Rochester. The Eastern Meeting
will be at Kingston on Jan. 29-31.—T. E.
LaMont, Assoc. Sec'y.

Feb. 5-6—The West Virginia Horticultural
Society will hold its 54th annual conven-
tion at Martinsburg.—Carroll R. Miller,
Sec'y.

Feb. 19-20—The American Pomological So-
ciety and the National Peach Council will
hold a joint meeting at the Coronado
Hotel in St. Louis, Missouri. The APS
will have an additional day's proceedings
of Friday, Feb. 21.—Carroll R. Miller,
Sec'y-Treas., Nat'l Peach Council.

Feb. 26-28—Centennial Meeting of the Ohio
State Horticultural Society. Meeting at
Deshler-Wallick Hotel in Columbus. A
program is planned to celebrate the Cen-
tennial.—Frank H. Beach, Sec'y.



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The Projectoveyor eliminates slow,
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trucks, trailers and other narrow con-
fined spaces. This portable retractable
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extends to approximately 19 feet. Com-
pact, light weight—readily moved
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AMERICAN FRUIT GROWER

OHIO HORTICULTURE

(Continued from page 33)

ioned the results of a huge grape industry along the banks of the Ohio, with Cincinnati becoming a great wine center. He planted the Catawba grape and began a successful grape-growing industry, but it did not thrive so well in later years due to the ravages of disease and insects.

Longworth discovered that many strawberries are self-unfruitful and suggested the planting of other varieties for cross pollination. The Ohio Everbearing raspberry, the first improved variety of *Rubus occidentalis*, was introduced by him. His writings were many, especially on grape culture and small fruits.

The Rome Beauty

The Rome Beauty apple is a product of the pioneering days of Ohio fruit growing. When Mr. Joel Gillett moved from Marietta to Rome township, Lawrence county, in 1816, he brought apple trees with him from the Putnam Nursery. They were grafted varieties which he set out the following spring. Among them, he found one seedling tree, and this he gave to his son Alanson, saying, "There is a 'democrat,' you may have it." (Even then Ohio was a Republican state.) Young Alanson Gillett planted it along the banks of the Ohio River near the present town of Proctorville. It grew to maturity and produced a fine apple of beautiful appearance. This was the original Rome Beauty apple tree, a great boon to southern Ohio fruit growers. Joel Gillett was the great grandfather of U. T. Cox, noted Ohio fruit grower of the early 1900's, who still lives near Ironton.

Johnny Appleseed

Johnny Appleseed figured prominently in the early history of Ohio Horticulture. He was really John Chapman, an interesting character whose activities carried him to Marietta, Newark, Ashland, Mansfield and other areas in north-central Ohio. Mr. T. E. Thornburg, veteran fruit grower of Ashland, Ohio, relates the experience of his grandfather who came to Ohio from Pennsylvania in 1815, and with whom Johnny Appleseed came and lived three summers and planted appleseeds brought from the cider presses of Pittsburgh.

The history of Ohio horticulture leaves the indelible impression that progress is not easily accomplished and that the persistent desire to obtain understanding is the key to evolution in whatever man attempts to do. For Ohio growers their Horticultural Society quickened the march of progress and its history also follows the pageant of Ohio horticulture.

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Use Elgetol this year and profit from its ovicidal, insecticidal and fungicidal action. Elgetol, the original water soluble dinitro dormant spray, gives quicker action because of its high penetrating properties. When buying your dormant spray this year, compare the cost on a basis of actual dinitro content.

EASY TO USE—Elgetol is quickly and completely soluble in water and can be added directly into the spray tank. Use Elgetol for quick, positive, economical control of aphids, bud moth, twig borer, crown gall, oyster shell scale and other pests.

ELGETOL "30" is specifically designed to be used with oil for the control of scale insects. See your Elgetol dealer or write to our nearest office for complete information.

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CLEAR LAND FAST! Powerful 6-HP motor with friction clutch for safe operation. Cuts down timber, brush and hedge; turn blade vertically and saw logs to length. Can be equipped to fell largest trees. Has clutch pulley for belt work. Fully guaranteed.
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The perfect patent varnish protection against

1. BARK EATING ANIMALS. 2. MICE. 3. TREE-BORERS. 4. WINTERKILL. Also 5. USED AS ADHESIVE IN DUST SPRAY. NO LONGER AN EXPERIMENT—Now beginning its third year. Tested at three State Exp. Stations. Mayor J. C. Hampton, Muncie, Ind., ordered 5 lbs. in 1945. Ordered 10 lbs. 1946. Other testimonials and literature mailed free on request. \$1.00 package, for 100 to 150 trees lasts over a year. Applied in one hour. Unused portion never spoils. 10 lbs., \$9; 25 lbs., \$20, prepaid. Discounts for dealers. **TREE-GROWERS**—You can use wire netting for No. 1, but how about No. 2, 3, 4, and 5?

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AMERICAN BEE JOURNAL, Box G, Hamilton, Ill.

NEW

SPRAY BOOM

The driver does it! The New Automatic Spraying Unit, manufactured by the Grand Traverse Orchard Supply Co. is operated by the driver alone, according to the manufacturer, and insures better, more complete coverage as well. The nozzles move so as to "brush" the trees with the same movement used in hand spraying. It is entirely automatic, and spraying can be done at night with equally good coverage. Streamlined design makes spraying closely planted trees easy.



TRACTOR ENAMEL

Twice as durable as pre-war finishes is the new Sherwin-Williams tractor and implement enamel. The new product comes in six colors, all tested in the heat of Florida sun. The new paints last twice as long as others, according to the manufacturer.



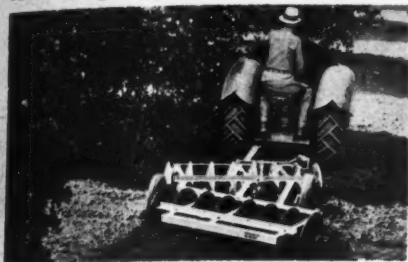
ROTARY DISC

Working close to vines and trees is possible with the new Earthmaster-Newkirk disc harrow. Its lift assembly permits lifting front gang as well as rear gang, and makes right turns as easy as left turns. A positive screw adjustment sets the harrow for any depth and holds it there, while axle

AMERICAN FRUIT GROWER

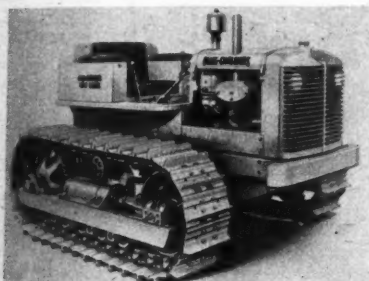
- SPRAY BOOM
- PRE-HARVEST SPRAY
- ROTARY DISC
- TRACTOR ENAMEL

adjustment permits raising or lowering wheels to prevent right-front and left-rear gouging.



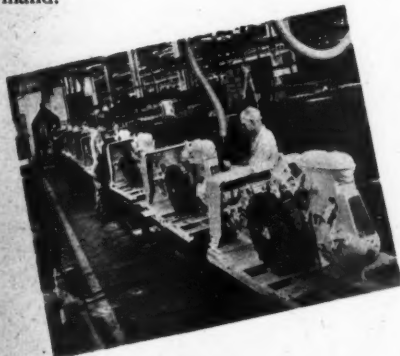
37 H. P. TRACTOR

An HD-5 Diesel track, 37 horse power, tractor which needs greasing only once in 1000 hours is announced by the Allis-Chalmers Co.



ROTOTILLER LINE

Graham-Paige Motors announces a speed-up of assembly of its Rototiller (shown below) to meet present demand.



ORCHARD FERTILITY

The successful fruit grower must keep pace of the modern trend toward balanced diets and scientifically planned menus, and supply fruits that contain the balanced requirements of today's diet. This can be done through proper plant feeding in the orchard and vineyard. "Some Newer Ideas on Orchard Fertility" is the title of an interesting new release by Swift & Co. which suggests new methods and applications of fertilizers in the orchard.

JANUARY, 1947



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PRUNERS

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PERFECTION
Plus light weight
and long life.

NEW CORONA HAWLEY.
Heavy duty professional pruner. The handiest, cleanest cutting, precision pruning tool EVER developed. Finest drop forged steel. Polished jaws. Tennessee Hickory handles—steel ring reinforced—put on with 10,000 lbs. pressure so they can't come off! Alloy steel hook. High carbon steel blade. Superior spring steel stop (patent applied for) actually takes the jar out of cutting. New bolt which stays tight. Lightest and toughest, easiest and fastest cutting pruner of them all! Will cut up to 2-in. branches. Lengths: 20", 26", 32". Today's improved design at same pre-war price!

CORONA CALKINS 8 (length 6½ in.) and 800 (7½ in.) are the same design. Forged from the finest steel, ground, properly tempered and perfectly hand matched. Replaceable blade is carbon steel for hardness and lasting cutting edge. One-hand operated fastener. Peer of all pruners... better than the best pre-war imported shears!

CORONA SLICE-CUT (available soon) is Corona's new improved, light-weight, easy cutting pruner with non-metallic handy-grip handles. The easiest working anvil type pruner used. A professional tool at a low price. Length 8½ inches.



CALKINS 8



CALKINS 800



SLICE-CUT

OUR HIGHEST QUALITY
PRUNERS AT SAME
PRE-WAR PRICES!

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CORONA CLIPPER CO.
CORONA, CALIFORNIA

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WATER PUMPS

Centrifugal Type

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Hose, ladders, axes, shovels, poles and fittings offered at attractive prices.

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EVER BEARING STRAWBERRY



The sensational everbearing strawberry introduction. A triumph in scientific strawberry hybridizing. Bears 60 to 90 days after planting. Glistening scarlet color; flavor sweet as honey. Perfect for canning and preserves. Bears fruit from June until frost. Very scarce, order yours today.

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No. 528—
LONG HANDLE
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New! Pruning Handbook by national
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Stevedore, Jr. Power Belt Conveyor makes produce handling easy and rapid. It takes the grunt and fatigue out of lifting in loading, stacking and elevating operations. It gets your produce to the consumer faster and in better condition . . . with less manpower expended.

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6-H.P. EASY TO MOVE
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Advertisement



From where I sit ... *by Joe Marsh*

Why Bert Won First Prize

Folks weren't surprised when Bert Childers won first prize for his corn at the county fair last fall.

Yet the judges admit it wasn't just because Bert had the finest ears of corn. He knew how to *display* them: neatly arranged, with all the husks cleanly trimmed, and the whole booth white and spotless.

"Trimmings" sure make a difference no matter what you're offering—as Andy Botkin, keeper of the Garden Tavern, well knows. Andy doesn't just sell good beer. He sells it in a place that's clean and attractive...in nice, pleasant surroundings that belong with

the enjoyment of a refreshing, wholesome beverage of moderation.

And Andy, of course, is a wholehearted supporter of "Self Regulation." That's the system by which the Brewers and tavern keepers themselves make sure that taverns selling beer are clean and orderly and a credit to the community.

From where I sit, people like Andy also rate a "First prize." Not just for the quality of the product—but for the "trimmings" too.

Joe Marsh

PETER GIDEON

(Continued from page 20)

each of our extra hardy sorts that stood well the last winter stand about as one to each 1,500 seedlings. There is no variety, without Siberian crab in it, that can stand our greatest extremes of climate, hence the necessity of a cross, and to get the hardiness of the crab in a tree with fruit of first quality is not a result that comes every time."

For several years he was in charge of the state experimental fruit farm established in 1878 on a tract adjoining his own. During this time he distributed many thousands of seedlings throughout the state.

Even before he became associated with the state experiment station he had been interested in the Minnesota state horticultural society. His name first appeared on the membership roll in 1868. In 1883, by unanimous vote, he was chosen an honorary life member. A regular attendant at the meetings, he always took a prominent part, and attended the annual meeting in 1898, a year before his death.

As an individual, Peter Gideon was a temperamental non-conformist, and he usually stood alone or with the unpopular minority. Generosity was a strong characteristic and he delighted in giving away his fruit, and heaped the measure when he sold it.

In a eulogy, printed a year after his death in 1899, it was said, "Probably no other American has labored so long and devotedly for the attainment of a specific ideal in an apple."

Today a monument, erected to Peter Gideon and the Wealthy apple, stands in Gideon Memorial Park, established on the old Gideon homestead. Erected in 1912 by the Native Sons of Minnesota, the monument is a short distance from the place where the first Wealthy apple tree stood.

150th ANNIVERSARY

(Continued from page 21)

inal tree in 1835; after John's son, Allen, learned the art of grafting.

These trees were the first true McIntosh apple trees propagated. John McIntosh had established a nursery early in the apple's history but the trees he sold were seedlings of the McIntosh apple and had none of the qualities of the true McIntosh.

After his venture into grafting in his own orchard, Allen went into the nursery business, and distributed the McIntosh variety all over Ontario.

In 1912, a monument was erected to the original tree. It stands today along the roadside, 350 feet due south of the spot where the first McIntosh tree grew, honoring a great producer, and a consumer's favorite apple.

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A BURKS WATER SYSTEM PAYS FOR ITSELF

The minute you turn on your BURKS System it begins to increase your profits. It helps put weight on hogs and beef faster, helps increase milk and egg production, too. Cuts chore time—Saves lugging water for house.

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600,000 users can't be wrong; you, too, need this labor saving torch, so simple anyone can use it. Complete with 4 gal. corrugated steel tank, seamless steel coil burner, 7 ft. hose, brass fittings, gauge, shoulder strap, instructions, \$22 express collect. Order today. Immediate shipment. Satisfaction guaranteed. VALUABLE LITERATURE FREE.

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JANUARY, 1947

NUT GROWER NEWS

REPORTS ON TESTS OF 90 WALNUT VARIETIES

THE WORK of accumulating test records on 90 black walnut varieties, tested in the Tennessee Valley area under work of the Tennessee Valley Authority, Norris, Tenn., and reported by Thomas G. Zarger, will be of interest to anyone contemplating planting black walnut trees of improved varieties, especially in the Tennessee Valley or in a similar climatic zone.

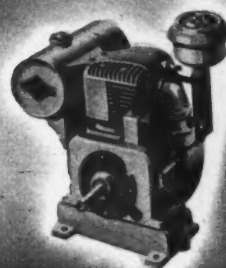
Mr. Zarger's report appears in full in the 36th annual report of the Northern Nut Growers' Association, and represents 12 years' experience on the nut testing, propagation, and planting of these selections.

Test Cracking Quality

Five measures used in the cracking tests were found to be good indexes of nut quality from the standpoint of showing significant differences among black walnut selections. "1. Nut weight, which represents the average weight of the cleaned, dry nuts tested. 2. Kernel weight, represents the total amount of kernel that can be extracted from the average nut. 3. Total kernel percent, which is the weight of the whole nut sample. 4. First crack kernel percent, computed similarly for the portion of kernels extracted with the fingers without recracking. 5. Quarters, which represents the average number of entire quarters recovered per nut and indicates the ease of extracting kernels unbroken."

A summary of the test would indicate the following varieties "best" as a result of experience with them to date. "Cochrane, Creitz, Edras, Grundy, Harney, Horton, Huber, Mintle, Monterey, Myers, Norris, Ohio, Sifford, Thomas, and Wanda." Only two of this list are recognized as "standard" varieties—Thomas and Ohio—and are usually available from nurserymen in reasonable quantity.

Sources of reading material, including grafting and budding, are available from the secretary, and the current report of the N.N.G.A., embracing valuable and important information on other phases of nut culture is available to non-members for \$1.00 per copy.—Mildred M. Jones, Secretary, P.O. Box 356, Lancaster, Penna.



BRIGGS & STRATTON ENGINES

A ReStatement of Policy

Loyalty to our customers of long standing—their needs come first.

Production at highest possible levels—limited only by availability of materials that meet our exacting specifications.

No deviation from Briggs & Stratton high standards of engineering, manufacture and inspection.

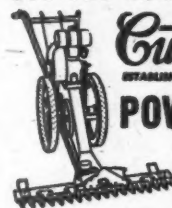
Expansion of our world-wide organization of Authorized Service Stations—staffed with skilled, factory trained personnel, and adequately supplied with repair parts.

These policies, re-affirmed now, are continued assurance to farm owners that equipment and appliances are—"powered RIGHT"—when powered by Briggs & Stratton."

BRIGGS & STRATTON CORPORATION
Milwaukee 1, Wisconsin, U. S. A.



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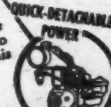


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Fast, versatile mowing power that works where tractor or horse-drawn machines will not go. Mows clean and fast in tight corners... 3-foot cut and variable speed sickle bar... so well balanced a boy can run it... rugged design. Engine detachable for use on other tools or jobs.

Write Dept. 52 for FREE Catalog.

Each tool functionally designed for top efficiency instead of being hung on power plant. Quick-detachable motor moved easily, from tool to tool. For complete details on this new kind of power, write



JAMES CUNNINGHAM, SON & CO.
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The newest and best in fruit plants, trees, shrubs, perennials, bulbs, roots, and vines.

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Only 15c a Word—CASH WITH ORDER. Count each initial and whole number as one word.
ADDRESS AMERICAN FRUIT GROWER, 1370 Ontario Street, Cleveland 13, Ohio

BABY CHICKS

BOTH FREE! FOUR COLOR CATALOG WITH FULL page pictures. Baby chicks ready to hatch. Rock bottom prices on all baby chicks. COLONIAL FARMS, Pleasant Hill, Missouri.

67 RARE VARIETIES BABY CHICKS, EGGS, BREEDING Stock, Ducks, Geese, Turkeys, Guinea, Chickens, Bantams. Free handsome catalogue, colored pictures, showing Lakenfelders; Polish; Hamburgs; Andalusians; Sussex; Giants; Cornish; Houdans; Minorcas; eleven beautiful varieties Wyandottes and Rocks; Australorps; Spanish; Buttercups; Anconas; Orpingtons; Rhode Islands; New Hampshire; Brahmas; Yokohamas; Turkeys; Vikings; 10 varieties Hybrids. MURRAY McMURRAY HATCHERY, Box B24, Webster City, Iowa.

SCHLICHTMAN'S U.S. APPROVED. PULLORUM CONTROLLED chicks, per 100 prepaid. Leghorns, Rocks, Reds, Orpingtons, Wyandottes, Minorcas, \$9.90. Assorted \$7.45. Pedigree sired and sexed chicks. Free catalog explaining 3-week replacement guarantee. SCHLICHTMAN HATCHERY, Appleton City, Missouri.

BEES

PACKAGE BEES FOR HONEY PRODUCTION AND Pollination, 2-lb. and Queen, \$4.25, 3-lb. and Queen \$5.25. F. O. B. Winnfield. Early orders will receive preference on shipping dates. RAPIDES APPIRIES, Winnfield, Louisiana.

CHAINS

FOR TRACTORS, TRUCKS, GRADERS AND BUSES. Large Stock, Prompt Delivery—Write for Circular. HORNER TRACTOR SALES, Geneva, Ohio.

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FOR SALE—COONHOUNDS, FOXHOUNDS, RABBITHOUNDS, Combination Hunters. Blacktans, Redbones, Blueticks, Spotted, Beagles, etc. Free literature. Litterature Free. WILDWOOD KENNELS, Herrick, Illinois.

EDUCATIONAL

EARTHWORM CULTURE. SEND POSTCARD FOR valuable free bulletin on "Earthworms: Their intensive Propagation and Use in Soil-Building." DR. THOMAS J. BARRETT, Dept. 7, Box 488, Roscoe, California.

CORRESPONDENCE COURSES AND SELF-INSTRUCTION books slightly used. Sold, Rented, Exchanged. All subjects. Satisfaction guaranteed. Cash paid for used courses. Complete information and 100-page illustrated bargain catalog FREE! Write—NELSON COMPANY, Dept. 65, Chicago 5, Illinois.

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DELPHINIUM. GROWER OF WORLD'S FINEST Giants; also Hardy English Border Carnation. Free literature on request. OFFERMAN GARDENS, 4709 W. Stevens, Seattle 6, Washington.

FOR SALE—EQUIPMENT & SUPPLIES

FOR SALE—NIAGARA GRADER WITH CULL ELIMINATOR 24" sizing section, 2 1/2" up 2-way belt suitable for jumble carton, or face and fill pack of any size. Overhead box conveyor length of machine, three packing stands. Available now. Price \$550 F.O.B. packing shed. CURTIS ORCHARDS, INC., Hosmer Street, Marlboro, Mass.

FOR SALE, IMMEDIATE DELIVERY. NEW APPLE graders complete with receiving conveyor, cull eliminator, polisher, roller picking table, and two sizing units to give three commercial sizes of apples. Also new 400 bushel capacity peach graders complete with defuzzer. Write HAMILTON COMPANY, Ephrata, Lancaster County, Pa.

"QUICK START" FOR YOUR CAR ON THE COLDEST day. Help that precious storage battery over the winter. \$6.00 includes Booster Battery and necessary accessories postpaid—easily installed by following complete directions. R. C. H. ENGINEERING COMPANY, Box 93, Riverside, Illinois.

DURAND PEACH GRADER AND BRUSHER, USED one year. \$350.00. Bean Sprayer on rubber 18 gallon minute Super Giant Pump, 15 H P Novo Engine factory re-built, 250 gallon tank. \$350.00. IDA ORCHARDS, Ida, Michigan.

FOR IMMEDIATE DELIVERY—TRESMOTT PEACH, pear, and apple graders. WISCONSIN alcoholated motors 2-25 h.p.; WATERFALL Irrigation Pipe. GORHAM RUPP Irrigation pumps (100-1000 gals. per min.); Giant BUCKNER Irrigator Sprinklers; Fruit Step ladders; ROOT Orchard and row crop power dusters (14 different models); Power and gravity conveyor; Orchard and row crop sprayers; Air operated pruning shears; Spray-hose, Spray materials of all types. Get our prices. MICHIGAN ORCHARD SUPPLY COMPANY, South Haven, Michigan.

ONE BEAN POWER TAKE-OFF 300 GALLON STEEL tank with refiller. No. 14 Royal Pump. Completely overhauled guaranteed A-1. Extra large tires 24x13.25. New axle wheels and rims. One new tire. HERMAN NIESCHULZ, Route 1, Columbiaville, Michigan. Telephone 44F-11 or W. K. BRISTOL, Almont, Michigan.

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HYBRID RASPBERRY—POTOMAC (RUBUS NEGLECTUS) Red & Black cross originated by our USDA which thrives on all soils. Very productive, large, easy to pick, deep purple fruit of finest dessert or canning quality. Vigorous upright canes, thornless, disease resistant and very winter hardy. Prices of "Potomac" for October or April Planting \$3.00 per 25; \$6.00 per 50 prepaid; \$95.00 per 1000. W. A. BENTS NURSERIES, Fruit and Evergreen Specialists, Cresco, Iowa. May we quote prices on Fruits and Evergreens?

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Orchard equipment included. Good tenant house one mile from town. Will lease on shares to experienced orchard man, giving option to buy or will sell now one-third cash. Excellent opportunity for right man. Reason for selling, owner's duties require his absence. For full details, write

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10 POLLY OH RED BIRD PEACH TREES 4 TO 5 FT. \$5.50. PONZER NURSERY, Rolla, Missouri.

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FORTY, HALF APPLE ORCHARD. GOOD VARIETIES \$2600.00. PAUL BORMANN, Metropolis, Illinois.

80-ACRES ON PAVEMENT 77 MILES DETROIT. Fruit section Wayne County. 16 in excellent orchard, mostly 25 year Sprys, Macs, Jonathans, Steele Reds. 5000 lb. 1946. Balance acreage now used dairying. Old 9 room home, 18 stanchion barn. Priced at cost. \$25,000, but cash. NORTHVILLE REALTY, Northville, Michigan.

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RAISE GIANT CHINCHILLA RABBITS. YEAR ROUND income. Ideal occupation. Tremendous demand for gorgeous furs, delicious meat. Great scarcity means large profits. We buy your youngsters. WILLOW FARM, 238, Sellersville, Pa.

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(Continued on page 43)

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FRUIT TREES,
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Choice, sturdy, upland grown stock that will
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 Our FRUIT TREES, STRAWBERRIES, RASP-
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A dependable source for true to name fruit
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Write for prices.

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Introducing the New Yellow Almada, Tennes-
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 SMALL FRUIT PLANTS TREES AND SHRUBS

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A complete line of Apple, Peach,
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Fast wood sawing, quickly pays
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OPPORTUNITY ADS

(Continued from page 42)

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 management. Several years experience and Pomology gradu-
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ORCHARDIST AVAILABLE—YOUNG FAMILY MAN,
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WANT FARM FROM OWNER, IS YOURS FOR SALE?
 A. F. HASSMAN, Ft. Madison, Iowa.

WANTED. A SECOND HAND SPRAY RIG. CLARENCE
 PALMETTER, Route 1, Mt. Sterling, Kentucky.

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MAGIC ELECTRIC WELDER, 110 VOLT AC-DC;
 welds, brazes, solders, cuts all metals, easy to use; full
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 One Year. Only \$19.95. Used by the Navy. Splendid for
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Apple orchard in full bearing, vigorous condi-
 tion set with full crop fruit buds. Ideal site, good
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 Also young apple orchard and favorable site for
 more orchard. Ideal frost free location.

Acres of orchard dependent on desires of
 buyer as present owner will continue operating
 adjoining orchards. Will lease on shares this or-
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Large modern country home with beautiful
 views, all up-to-date conveniences, completely
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 crete roads.

An ideal combination of a complete modern
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 Good schools in nearby small towns. Near Missis-
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ED REDMAN

Louisiana, Missouri

PROMINENT GROWER PASSES AWAY

A man who has given upwards of
 sixty years to the culture and improve-
 ment of orchard fruit varieties has
 passed away.

He is Hiram Burkholder, 84, of
 Clyde, Ohio, who, until the time of
 his death had more than 40 varieties
 of plums, 35 varieties of cherries, and
 30 varieties of peaches in actual pro-
 duction.

Past President of the Ohio Horti-
 cultural Society, Mr. Burkholder ex-
 perimented widely with new varieties
 until his death. Some of his experi-
 ences with plum varieties are related
 in an article, "Success With Plums"
 in the March, 1946, issue of the
 AMERICAN FRUIT GROWER.

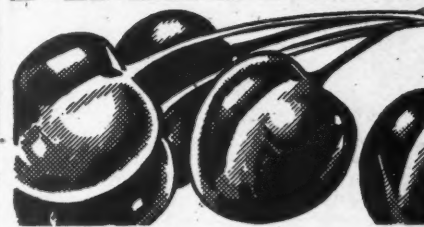
FRUIT BREEDING

(Continued from page 11)

as rapidly been replaced. In our life-
 time, the high bush blueberry has
 risen from the status of a wild plant
 to that of a cultivated delicacy.

Making a new variety is an easy
 thing. Making a better one is some-
 thing else. With every new and better
 introduction, continued improvement
 becomes more difficult. Nevertheless,
 no field is even today as little explored
 nor as easy to make a contribution in,
 as that of putting together a new and
 better variety—namely, plant breed-
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MALONEY



CHERRY TREES

MALONEY CHERRY TREES are all inspected
 for TRUENESS to name; you get EXACTLY
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 YOUNG and EVERY year! Write today for FREE
 Catalog showing all types, as well as other North-
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Dr. N. E. Hansen
 Greatest Plant
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BLUEBERRIES this year

Plant Keith's bearing age cultivated bushes. Eat delicious,
 big, beautiful Blueberries this summer. Grow in garden or
 yard easily as shrubs or roses. We tell you how. Ideal for
 summer homes. Amazing size—3 to 5 times larger than wild
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 today for your FREE copy.

KEITH PLANT NURSERY, Box 8, Sawyer, Michigan

DWARF APPLE TREES

On Mallard undersock Red Delicious,
 Jonathan, McIntosh, Staymen, Winesap,
 Yellow Transparent, Wealthy. Write for
 Free copy of our catalogue and price list.

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 Write for Free Copy Our New Planting
 Guide listing more than 800 Varieties of
 Choice Fruits, Nuts and Ornamentals.

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READY-TO-BEAR FRUIT TREES

FOR SPRING SHIPMENT

Apples and pears—trees have already born fruit.
 Ht.—8 to 10 ft. Stem up to 2 in. in dia. Scientifically
 grown with fibrous roots bear main stem.

All popular varieties. Write for infor-
 mation and prices. Big Catalog
 gives details on ornamentals,
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Ramblings

OF A HORTICULTURIST

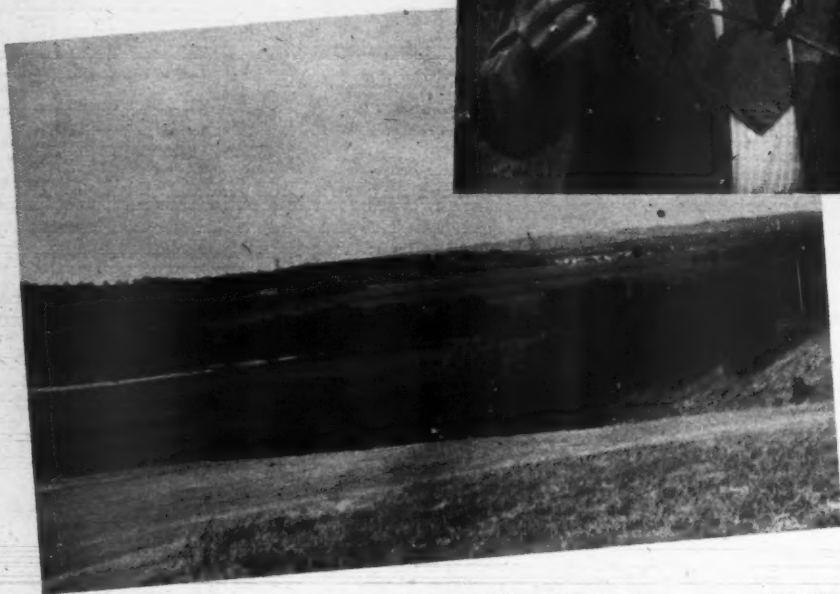
Conquest Through Research

THE TREK through the northern tier of central states carried your Rambling Horticulturist finally to Rochester, Minnesota, home of the famed Mayo Clinic.

Previous to my visit to Rochester I had known that the Mayo Association had sponsored a new kind of research project, a horticultural and forestry experimental program. This



Benjamin Dunn checks one year growth on a Virginia Crab apple tree.



View looking from proposed building site on the Institute's grounds toward Rochester.

new project, known as the Mayo Forestry and Horticulture Institute was organized in 1943 for the purpose of promoting research in horticulture and forestry. Much of the responsibility for the creation of the Institute belongs to Mr. A. J. Lobb, Secretary-Treasurer of the Mayo Association, and also a member of the Board of Regents, University of Minnesota.

When the 49-acre orchard of the late Dr. L. B. Wilson, member of the Mayo Clinic staff, was given to the Mayo Association in the fall of 1943, Mr. Lobb went into a huddle with other officials to find a way to turn the newly acquired orchard into an asset to Minnesota horticulture. They consulted Professor W. H. Alderman, chief horticulturist at the

University of Minnesota, and finally came up with a plan to utilize the orchard in a long-range and extensive research program, partly in cooperation with the University's horticultural department.

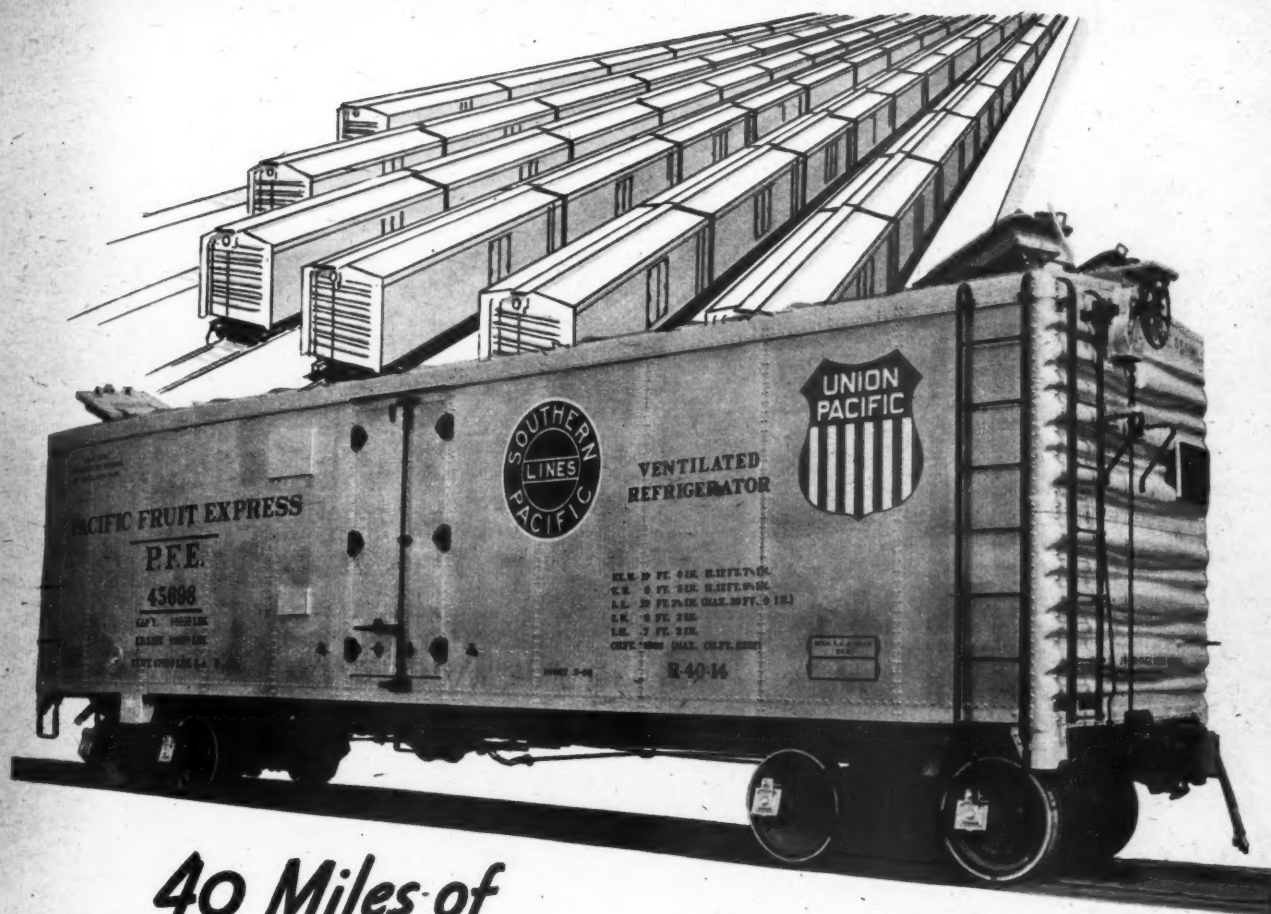
The agreement between the University of Minnesota and the Mayo Association called for an Advisory Council of administrators, three to come from the Association and three from the University. The famed University of Minnesota supplied three distinguished scientists and administrators in the persons of C. H. Bailey, Dean of the Department of Agriculture, Harry Schmitz, Dean of the College of Agriculture, and Professor W. H. Alderman, Chief of the Division of Horticulture. From the Mayo Association came dis-

tinguished, medical scientists in the persons of Dr. F. C. Mann, Head of the Mayo Institute of Experimental Medicine, and Dr. Carl Schlotthauer, member of Dr. Mann's staff. The third representative on the Council from the Mayo Institute is Mr. Benjamin F. Dunn, now Superintendent of the Institute of Forestry and Horticulture.

Already some 200 acres are being devoted to the growing of horticultural plants for experimental use. The research program calls for extensive testing of fruit varieties for Minnesota conditions. One of the chief objectives is to aid in discovering new and better varieties of all kinds of fruits which will survive the rigors of the northern climate.

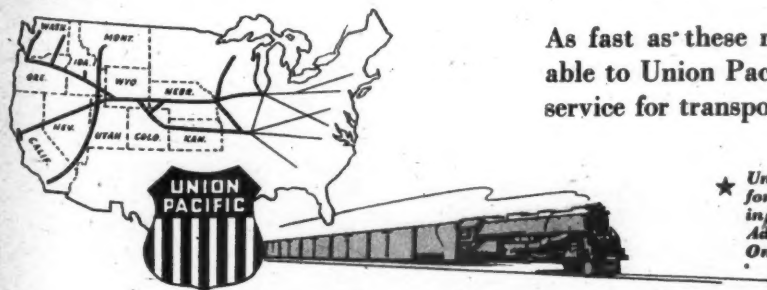
Some of the plantings are being devoted to experimental work with sprays for insect and disease control, others to fertilizer treatments and cultural programs and still others to a study of stock-scion relationships.

When you make your visit to Rochester, Minnesota, make it a point to visit the Mayo Forestry and Horticulture Institute, and by all means look up Ben Dunn, Superintendent of the Institute. I think you will enjoy your visit immensely, just as I did.



40 Miles of New Refrigerator Cars soon available for your Industry

Now being built are 5000 refrigerator cars of the most modern design and construction; the result of years of constant research. These cars are of the same design as the Pacific Fruit Express Company's lightweight experimental car recently on tour for a preview by shippers.



- ★ HIGH TENSILE STEEL BODIES
- ★ NEW EASY-RIDING TRUCKS
- ★ AIR CIRCULATION FANS
- ★ EXTRA THICKNESS LIGHTWEIGHT INSULATION
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UNION PACIFIC RAILROAD

The Strategic Middle Route

EDITORIAL PAGE

AMERICAN FRUIT GROWER

E. G. K. MEISTER
Publisher

Technique of Fruit Breeding

IT IS NOT difficult to master the technique of fruit breeding, but it is an extremely trying and painstaking art to practice. Yet the opportunities for improvement in fruit varieties are unlimited, and there is no activity in the entire field of horticulture which is as fascinating or has the possibilities for lasting reward as the creation of a new plant or fruit.

Luther Burbank was an industrious plant breeder and demonstrated to the world the plastic nature of plants. His work above everything else was a tremendous stimulant to plant breeding and led many others to follow in his footsteps to the glory and profit of American horticulture.

It is not necessary to be a recognized botanist, plant breeder, or geneticist to delve into the mysteries of nature and bring forth a new fruit. Fruit farms as well as experiment stations can create new fruits if growers will set aside a small garden for experimental purposes and try crossing a few varieties and setting out some seedlings.

If every grower in the United States, and there are more than 150,000, did some plant breeding, it would be like having many Luther Burbanks at work, and it is needless to point out what might come from such extensive effort.

The Surplus Spectre

There is plenty of evidence that production of fruit is going to increase in the next year or two. Among the reasons are more extensive plantings of all fruits, improvement in production, and particularly the new spray chemicals, including DDT, which are making possible bigger yields and greater plant vigor. There are also indications that demand will decline and that agricultural economics gen-

erally will follow much the same pattern as after World War I. These things indicate the need of serious study by all fruit interests of markets and disposal of surplus fruit through processing channels. A splendid example of what can be accomplished by canning of surplus fruits is the present juice volume of Florida citrus fruits. Of a total of 86,000,000 boxes of citrus fruits produced in the 1945-1946 season, 48% was processed. Canned juice, much of which is surprisingly like fresh juice, can now be served by the housewife when fresh citrus fruits are expensive and difficult to obtain, especially in the smaller cities and towns of the United States. Florida growers have converted seasonal demand for citrus fruits into a twelve month all-year-round market. There are many opportunities for fruit growers in the processing field, and it is well to examine now its possibilities from a marketing angle and use it as a tool to solve the surplus problem.

The roadside market needs attention by most fruit growers. Highway traffic is bound to reach a new high as buyers for tree ripened fruit and fresh produce will again appear at the very door of the growers. Alert growers will advertise their orchards, put their roadside markets in tip-top shape, package attractively what they grow and lose no opportunity to attract trade when America is again on wheels and seeking the relaxation of rural thoroughfares.

It is not too early to study the possibility of roadside marketing. The grower who is sales-minded seldom has surplus trouble.

Conventions

CONVENTIONS are important

*For the facts that they can give
To each progressive grower*

To help make his orchards live.

But they mean even more than that:

They help put spice in life,

Or even give a guy a chance

For fun without the wife!

Conventions make a man sit up

And hear some good advice,

They spin him on his ear a bit

Until he's thinking twice.

So look up the next convention,

And see if you can't go.

You may find out an awful lot

You really ought to know!

The Old Year and the New

BEFORE CONTEMPLATING the coming year and what it has in store for fruit growers, let us take a look at the past year, for many of us are bound to remember the year 1946 for some outstanding experiences. Late frosts preceded by a prolonged spell of warm weather and early blossoms again killed fruit buds in many important areas and spurred research in frost protection.

Overshadowing all other factors in the 1946 season was the impact of new spray materials and the high quality and clean fruit produced in many orchards for the first time in many years. Nineteen forty-six was the first year of general use of the new insecticide DDT, and results were beyond expectation. Generally, prices remained firm and demand satisfactory. The cherry growers are not apt to forget those months when cherries brought 15c a pound, but all other fruits, including citrus, were in demand.

The yoke of regulation and fixing of prices lifted almost as suddenly as it was imposed upon growers and caused little or no disturbance in markets. The old year was good to fruit growers, even if the entire post-war era has not yet lived up to its early promise.

What does the new year hold? The growers' chief concern is markets and prices, for production costs are apparently going to continue to be high, although the labor situation should ease a little. Many economists predict a minor recession in the coming year, which is not, however, likely to occur before major fruits are harvested.

A new Congress may bring harmony between labor and industry, bringing with it stability and the post-war prosperity which is already overdue. If this occurs, growers need fear no great change in the price structure.

It appears that shortages will continue to exist. Labor, fertilizers, and insecticides all are in short supply and will continue to be scarce. The oft-repeated warning to plan early and order ahead still holds a pertinent message for fruit growers.

Much new machinery is in the offing, and 1947 will undoubtedly see much progress in automatic spraying and relief of the drudgery of spraying from the ground. The new multiple masts which can be attached to present equipment and a greater use of concentrates in mechanical sprayers should reduce the cost of production as well as increase the effectiveness of the growers' spray program. The year 1947 should be a good one for fruit growers.

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